

EX ANTE EFFICIENCY AND EX POST EQUALITY

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I. Ex Ante Efficiency and the Equality Challenge

A. The Role of Ex Ante Efficiency in Normative Law and Economics

As an academic discipline, the field of law and economics unhappily straddles the positive and normative.¹ On the positive side, economics aspires to study the causes and the consequences of alternative legal rules. In principle, a purely positive study should be of value to people holding just about any normative perspective that cared about the consequences of policy for human welfare. Whether one seeks to maximize welfare, to equalize it, to maximize the welfare of the least well off, or for that matter to minimize welfare, one would want to know the correct causal stories regarding the effects of various interventions. As a pure science, the only relevance of the fact that legal economists sometimes espouse normative views is that it may cause people to entertain doubts about the objectivity of its causal analyses.²

However, the practitioners of law and economics have tried to carve out a normative role for their discipline. The aspiration has been to find a modest normative criterion that enables a distinctly limited but not vanishingly small class of moral judgments.³ The core idea is captured

¹ See A. MITCHELL POLINSKY, *AN INTRODUCTION TO LAW AND ECONOMICS* viii (2d ed. 1989) (addressing distinction between positive and normative economic analysis); Izhac England, *The Failure of Economic Justice*, 95 *HARV. L. REV.* 1162, 1163 (1982) (economics as a science should be no more normative than physics).

² See, e.g., Morton Horwitz, *Law and Economics: Science or Politics?*, 8 *HOFSTRA L. REV.* 905, 911-12 (1980) (economic analysis has inherently conservative bias).

³ For a strong statement that Pareto efficiency avoids reasonable normative controversy, see ANTHONY BOARDMAN, DAVID GREENBERG, AIDAN VINING, AND DAVID WEIMER, *COST BENEFIT ANALYSIS: CONCEPTS AND PRACTICE* 29 (1996) (“One would have to be malevolent not

by the idea of “efficiency”, or the desirability of avoiding pure waste.⁴ In a Robinson Crusoe world, Crusoe is guilty of waste or inefficiency if he employs the scarce resources of his environment in a manner that produces lower welfare for himself than some feasible alternative use of those resources would have generated.⁵ For Crusoe, efficiency is really a matter of prudence.⁶ In a multiperson world, resources are allocated (Pareto) inefficiently if some reallocation of those resources was feasible that would make some persons better off without making others worse off.⁷

The problem with the Pareto criterion is the limited scope of the judgments it permits.⁸ Most significant legal changes have winners and losers, and thus the status quo ante and the post-reform social order are not Pareto comparable.⁹ The challenge is to identify a normative criterion

to want to achieve Pareto efficiency.”)

⁴ See Juanda Daniel & Kevin Marshall, *Avoiding Economic Waste in Contract Damages*, 85 NEB. L. REV. 875, 898 (2007) (discussing waste-avoiding function of Pareto efficiency norm)

⁵ It has been argued that any social system will introduce some distortion of incentives relative to a Crusoe world. See Donna M. Byrne, *Progressive Taxation Revisited*, 37 ARIZ. L. REV. 739, 789 (1995).

⁶ One might argue that retributive concerns would make it undesirable for Crusoe to be better off, if he had done something terrible in the past. See Larry S. Temkin, *Harmful Goods, Harmless Bads*, in *VALUE, WELFARE, AND MORALITY* 168 (R.G. Frey & Christopher Morris, eds., 1993). Retribution presents a theoretical problem for the Paretian ideal, but in practice the tension is less serious because retributive punishment usually provides goods for those not being punished, such as avoiding a sense of resentment and gratifying a taste for retribution.

⁷ The concept derives from VILFREDO PARETO, *MANUAL OF POLITICAL ECONOMY* 47-51, 105-06 (Ann S. Schwier & Alfred N. Page eds., Ann S. Schweier trans. 1971) (1927).

⁸ See MATTHEW D. ADLER AND ERIC A. POSNER, *NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS* 10 (2006) (Pareto criterion too strong to be realistic normative standard).

⁹ It is sometimes thought that the Pareto criterion is conservative in opposing changes that have losers, but in fact the criterion is silent regarding changes with both winners and losers

that has somewhat more scope than the Pareto idea while still remaining true to the aspiration to make a limited class of moral assessments that should be acceptable to people holding a wide range of reasonable normative views.¹⁰

The most famous of the attempts to modify the notion of efficiency to expand its scope is the Kaldor-Hicks criterion.¹¹ A policy is Kaldor-Hicks efficient if the winners from the change benefit sufficiently that they could compensate the losers from the change and still be better off.¹² However, Kaldor-Hicks does not succeed in becoming a norm that is modest and widely acceptable to persons holding the range of reasonable normative views.¹³ A Kaldor-Hicks approved policy change may generate a tiny welfare gain for those who were already rich and a

and provides no normative support to either conservatives or those favoring change.

¹⁰ It is sometimes argued that Pareto efficiency is inherently tied to preferences. *See, e.g.*, GERARD DEBREU, *THEORY OF VALUE* 102 (1959). In that sense the theory would not be uncontroversial, since people can prefer things that disserve their welfare. The Pareto concept of this article means that a one person is better off in a welfare sense while no one is worse off. The issue of the relationship between preference satisfaction and being better off is bracketed.

¹¹ In the form of cost-benefit analysis measured by willingness to pay, this criterion received support on February 17, 1981, when President Reagan signed Executive Order 1229 calling for cost-benefit analysis of regulations. *See* JAMES T. CAMPEN, *BENEFITS, COST, AND BEYOND* 3 (1986) (discussing this history).

¹² The Kaldor-Hicks criterion comes from Nicolas Kaldor, *Welfare Propositions of Economics and Interpersonal Comparisons of Utility*, 49 *ECON. J.* 549, 550-51 (1939); J.R. Hicks, *The Foundations of Welfare Economics*, 49 *ECON. J.* 696 (1939).

¹³ One problem with Kaldor-Hicks is that two states of affairs can each be Kaldor-Hicks efficient relative to the other, the so-called Scitovszky paradox. *See* Tibor Scitovszky, *A Note on Welfare Propositions in Economics*, 9 *REV. ECON. STUD.* 77 (1941) (noting that changes in relative prices across states of affairs make this paradox possible).

large welfare loss for those who were already poor.¹⁴ This could happen because the rich were willing to pay a large amount to obtain a small welfare gain, and the poor were not willing to pay a large amount to avoid the significant welfare loss, but the Kaldor-Hicks criterion did not require that the rich actually pay the poor the amount needed to compensate them for their loss.¹⁵

Still, it does not seem that the core idea behind Kaldor-Hicks, which we might express colloquially as generating a “bigger pie”, can be completely irrelevant to an efficiency norm.¹⁶ One idea is to defend a package or principle of Kaldor-Hicks changes on the grounds that everyone will come out better off from the package deal.¹⁷ Each specific change causes gains and losses, where the gains exceed the losses (in willingness to pay terms). If the gains and losses are sufficiently random, everyone may come out ahead from adopting the general principle of Kaldor-Hicks.¹⁸ The Kaldor-Hicks criterion would then have served as an indirect or

¹⁴ See Ronald M. Dworkin, *Is Wealth a Value?*, 9 J. LEGAL STUD. 191, 197 (1980) (giving example in which a book is currently held by a poor person who values it less than a rich person who probably would never read it).

¹⁵ See DAVID W. BARNES & LYNN A. STOUT, *THE ECONOMIC ANALYSIS OF TORT LAW* 16 (1992) (“Under the Kaldor-Hicks position, compensation need not be paid for a reallocation to be efficient. A reallocation is efficient if there is sufficient gain to create the potential for full compensation.”)

¹⁶ An interesting question is whether a bigger pie can have normative value apart from its effect in improving human welfare. This becomes especially important if prosperity causes tastes to adjust so that people are not happier occupying the wealthier state. The enhanced freedom of action may itself have value, and there may also be welfare gains to the process of growth itself.

¹⁷ See JOHN D. GRAHAM, *SAVING LIVES THROUGH ADMINISTRATIVE LAW AND ECONOMICS* 395, 414 (2008) (single vs. repeated applications of Kaldor-Hicks)

¹⁸ See A. Mitchell Polinsky, *Probabilistic Compensation Criteria*, 86 Q. J. ECON. 408, 409 (1972) (analyzing bundles of changes with randomness of distribution).

proximate instrument for promoting the more defensible Pareto norm.¹⁹

There are two problems with the argument that Kaldor-Hicks efficiency can serve as an indirect means of promoting Pareto efficiency through package deals. The first is that the losers from Kaldor-Hicks changes may be *systematic* rather than random.²⁰ If the same people are on the losing side through most of the Kaldor-Hicks efficient moves, then they may wind up losing from the package of changes no matter how long the game is played.²¹ A particular worry in this regard is that the poor may be systematic losers, because of the Kaldor-Hicks emphasis on willingness to pay.²² The second problem is that particular individuals may suffer such *large losses on particular plays of the game* that they cannot make up for those losses with gains elsewhere. That is especially likely if the nature of the loss the person suffers makes it hard for her to enjoy the compensation she might receive from future plays, for example if a change

¹⁹ Richard Posner has famously argued that individuals would consent to a regime of Kaldor-Hicks or wealth maximization. See Richard A. Posner, *The Ethical and Political Basis of the Efficiency Norm in Common Law Adjudication*, 8 HOFSTRA L. REV. 487 (1980). For a critique, see Guido Calabresi, *The Pointlessness of Pareto: Carrying Coase Further*, 100 YALE L.J. 1211, 1225 (1991)(no social compact to go along with Kaldor-Hicks changes was ever made.)

²⁰ See Adler and Posner, *supra* note 8, at 20 (“It might be true that tomorrow’s project will benefit people who were injured by yesterday’s project, but it might also not be true.”)

²¹ See Lucian A. Bebchuk, *The Pursuit of a Bigger Pie: Can Everyone Expect a Bigger Slice?*, 8 HOFSTRA L. REV. 671, 672 (1980) (Posner’s wealth maximization policy produces systematic losses for some groups).

²² See England, *supra* note 1, at 1176 (“Where preferences backed up with money are sovereign, there is no room for indulgence toward those who lack the drive or the ability to maximize wealth.”)

resulted in death or serious bodily injury and anguish.²³

The first problem can be tackled by coupling the Kaldor-Hicks package of reforms with redistributive policies designed to cancel out any systematic losses.²⁴ If most people receive compensation merely by the repeat play of the Kaldor-Hicks game, it should be possible to take some portion of the large pie that results and use it to compensate those who suffered systematic losses. For that reason, legal economists are generally sympathetic toward micro-policies that maximize wealth together with macro-policies of taxation and spending that ensure the wealth increase is broadly shared.²⁵ The second problem of particularly large losses on individual plays of the game is harder to surmount.

One idea is to adopt an ex ante approach to the Pareto efficiency ideal.²⁶ A policy change would be ex ante efficient if some people would rationally expect to be better off with the policy

²³ It has been argued that this factor makes it difficult to devise Pareto efficient rules in the area of wrongful death. See Jennifer H. Arlen, *An Economic Analysis of Tort Damages for Wrongful Death*, 60 N.Y.U. L. REV. 1113, 1126-27 (1985).

²⁴ It may not be necessary to adopt additional redistributive policies, since existing institutions such as taxes on income, inheritance, and property, as well as practices of charitable giving, result in considerable redistribution of any enhanced wealth created.

²⁵ See H. Varian, MICROECONOMIC ANALYSIS 216 (1979) (second fundamental theorem of welfare economics).

²⁶ The concept of ex ante efficiency is explored in Matthew D. Adler, *The Puzzle of “Ex Ante Efficiency”: Does Rational Approvability Have Moral Weight?*, 151 U. PA. L. REV. 1255 (2003). This article argues that it is not morally attractive to give people what they would have wanted, since this is not an actual choice which embodies consent-based values nor is it the decision that would actually be in the person’s best interest. This article defends a version of ex ante efficiency that is welfare-based rather than choice-based. It remains true that the decision which is objectively best relative to a given set of probabilities may turn out badly, but it does not follow that one would recommend any different course of action be taken.

change (or package of changes) and no one would rationally expect to be worse off.²⁷ The ex ante approach would not consign every policy change that harmed someone to the realm of the normatively indeterminate.²⁸ Rather, the policy change would be approved by the criterion if the prospects of gain for every individual were sufficiently attractive to outweigh in rational expectation the prospects for losses.²⁹ Although the policy change might have individual losers, it would not have *systematic* losers, and no person or group would have been selected by policy as likely to endure losses. People who disagree on issues of distributive justice might therefore have reason to agree about this (still rather small) range of normative judgments. In that sense, the ex ante approach seems to be the most promising idea for a normative criterion that retains the modest aspirations of the ex post Paretian ideal while expanding its practical relevance.

B. The Egalitarian Challenge to Ex Ante Efficiency

²⁷ The ex ante approach is not necessarily committed to a view of “expectation” that involved the mathematical mean or average of prospects. The individual ex ante may have rational reasons to care about the variance and other traits of the distribution of her prospects in addition to the mean or mathematical expectation.

²⁸ An early statement of the thesis was presented in Gordon Tullock, *Two Kinds of Legal Efficiency*, 8 HOFSTRA L. REV. 659, 664 (1980) (ex ante improvements although some will have an unpredictable run of bad luck).

²⁹ See JAMES M. BUCHANAN & GORDON TULLOCK, *THE CALCULUS OF CONSENT* 63-84 (1962)(describing a constitutional stage where uncertainty is sufficiently great that individuals can rationally support public-regarding policies).

In an important article, Professors Matt Adler and Chris Sanchirico argue that the ex ante efficiency ideal can produce results that should be unattractive to normative egalitarians, and in that sense cannot serve as a modest or neutral ideal for people holding a wide range of reasonable normative perspectives.³⁰ The objection can best be seen with a simple example. Suppose that the world consisted of two individuals, Jack and Jill, and that the status quo involved welfare levels (assumed to be cardinally measurable³¹ and interpersonally comparable³²) of 100 for Jack and 100 for Jill.³³ A policy change is proposed, the effects of which cannot be known with certainty. Under the policy change, with 50% probability (“heads”) Jack will have 130 welfare units and Jill will have 75. With 50% probability (“tails”) the policy change will leave Jack with 75 welfare units and Jill with 130. Would the policy represent an improvement on the status quo?

Arguably the policy is ex ante efficient. If one assumes that Jack and Jill are risk neutral with regard to welfare levels³⁴ (which is consistent with their being risk averse regarding

³⁰ Matthew D. Adler & Chris W. Sanchirico, *Inequality and Uncertainty: Theory and Legal Applications*, 155 U. Pa. L. Rev. 279 (2006).

³¹ . An early attempt to tackle the problem of comparing utilities cardinally and interpersonally was John C. Harsanyi, *Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparisons of Utility*, 63 J. POL. ECON. 309 (1955).

³² For a view that interpersonal good cannot be compared see W.S. JEVONS, *THE THEORY OF POLITICAL ECONOMY* 85 (1970) (first published 1871)

³³ Ex ante efficiency as an ideal is not committed to the idea that welfare is interpersonally comparable. Each person could expect to gain from a change by her own lights. However, the use of social welfare functions with distributive elements does seem to presuppose the possibility of such comparisons.

³⁴ It has been argued that any assumption of risk aversion or risk preference with regard to welfare levels requires a metric of good or welfare that is independent of weights given to those goods when being compared across states of nature. See JOHN BROOME, *WEIGHING*

monetary income³⁵), then both Jack and Jill would assess their expected welfare under the policy as $\frac{1}{2}$ times 75 plus $\frac{1}{2}$ times 130 or 102.5 welfare units, an improvement on their status quo level of 100 units. The question is whether the society should take their ex ante expected benefit from the policy to mean that the policy is indeed a desirable one to adopt.

An egalitarian might entertain a social welfare function that gave weight not only to absolute levels of welfare but also to equality of welfare. In principle, this weight could be so substantial as to challenge the desirability even of ex post Pareto efficient changes³⁶, but Adler and Sanchirico argue for social welfare functions that, while egalitarian, accept the desirability of ex post Paretian moves.³⁷ One possible social welfare function would “score” a particular state of affairs as Jack’s welfare plus Jill’s welfare minus one-half the difference between their welfares.³⁸ By that criterion, a change to a state that actually made both people³⁹ better off would

GOODS: EQUALITY, UNCERTAINTY AND TIME 147 (1991)..

³⁵ This distinction is discussed in the text accompanying notes 121-130, *infra*.

³⁶ Derek Parfit has distinguished between “strong egalitarians”, who might oppose Pareto efficient changes that increase inequality and “moderates” who believe that something is lost when equality increases but that this something is necessarily outweighed by social gains when a Pareto efficient move is made. See Derek Parfit, *Equality and Priority*, in IDEALS OF EQUALITY 17 (Andrew Mason ed. 1998)

³⁷ Adler and Sanchirico, *supra* note 30, at 294.

³⁸ A complication concerns the definition of “welfare”. The Pareto criterion, which speaks loosely of someone’s being “better off”, is often understood in terms of a preference-satisfaction notion of “welfare”, but this is not required. Professor Broome defends a Pareto-like conception that he calls the “principle of personal good”, which means “(a) Two alternatives are equally good if they are equally good for each person. And (b) if one alternative is at least as good as another for everyone and definitely better for someone, it is better.” Weighing Goods, *supra* note 34, at 165.

³⁹ Broome qualifies his principle of personal good with reference to non-human animals. *Id.* at 165.

be progress regardless of the distribution.⁴⁰ Nevertheless, the criterion would have trouble with the ex ante efficient policy at issue here.

The social welfare planner would value the status quo as $100+100-1/2(100-100)$ or 200 welfare units. Under the proposed policy, the planner would need to provide a social “score” for each of the two possible states of affairs, and then would need to combine these two equally probable scores into a single social assessment. The planner, if risk neutral regarding alternative states of affairs, might value the policy at $1/2[130+75-1/2(130-75)]+1/2[75+130-1/2(130-75)]=177.5$ welfare units. The policy, though ex ante efficient relative to the status quo, would reduce social welfare by 22.5 units and should not be adopted. The potential for gains in individual welfare is outweighed by the prospect for serious ex post inequalities under either the “heads” or the “tails” states of affairs.

It is possible that the planner herself could embrace an ex ante approach to equality.⁴¹ Perhaps it is *inequality of prospects* that is socially unattractive, and the proper social welfare function would be Jack’s prospects plus Jill’s prospects minus one-half the difference between their prospects. By that criterion, the ex ante efficient policy would be adopted. If the status quo is retained, both Jack and Jill have 100 welfare units with certainty, and thus an expectation of 100 welfare units, with no difference between their expectations. So the ex ante planner

⁴⁰ A fairness norm interposed to block a Pareto efficient transaction raises the question of to whom one is being fair. See Louis Kaplow, *Fairness Versus Welfare: Notes on the Pareto Principle, Preferences, and Distributive Justice*, NBER WORKING PAPER NO. 9622 5 (April 2003).

⁴¹ The idea of ex ante equity has been discussed in the management science area. See, e.g., Jayavel Sounderpandian, *Ex Ante Equity in Public Risk*, 37 OPERATIONS RESEARCH, No. 4. (1989); Ralph L. Keeney, *Utility Functions for Equity and Public Risk*, 26 MANAGEMENT SCIENCE (1980).

evaluates the current prospects at $100+100-1/2(100-100)$ or 200 welfare units.⁴² Under the proposed policy, Jack's prospects improve to 102.5 welfare units, Jill's prospects also improve to 102.5 units, and the difference between their prospects remains zero, so the ex ante planner would evaluate the policy change as leading to $102.5+102.5-1/2(102.5-102.5)=205$ units. In short, the tension between egalitarianism and ex ante efficiency arises only if egalitarianism is regarded as an ex post concept, to be assessed state by state, rather than an ex ante concept where the value is attached to avoiding inequality of prospects.⁴³

Adler and Sanchirico argue that equality is best seen as an ex post rather than an ex ante concept, and therefore that the tension between ex ante efficiency and egalitarianism is real.⁴⁴ They present two explicit arguments for this conclusion, as well as one implicit argument.

The first explicit argument in favor of the ex post approach is the argument from dynamic consistency. Adler and Sanchirico argue that an ex ante egalitarian planner would exhibit a disturbing inconsistency in her preferences, which would lead to an incoherent pattern of policy choices.⁴⁵ Again, the example presented above will suffice to illustrate the possibility. The ex ante planner favored the policy change at the time it was adopted, because it improved Jack's

⁴² There is of course nothing magical in the precise arithmetic of this example. The point is that inequality is in some way treated as a negative item, but not sufficiently negative to outweigh absolute gains in welfare. Alternative ways of conceptualizing the value of equality mathematically are discussed in notes 151-54, *infra*, and accompanying text.

⁴³ One could construct an ex ante social welfare function in which inequality of prospects outweighed absolute gains in prospects, but the interesting claim of Adler and Sanchirico is that ex ante efficiency might be undesirable even with social welfare functions that did not assume this conclusion by the heavy weight they gave to reducing inequality.

⁴⁴ Adler and Sanchirico, *supra* note 30, at 334-65.

⁴⁵ Adler and Sanchirico, *supra* note 30, at 335-43.

prospects and improved Jill's prospects but did not create any undesirable inequality between their prospects. Once the policy is adopted, however, the coin has been tossed and we now know whether we are in the "heads" or the "tails" states of affairs.

Suppose the world comes up "heads", so Jack has 130 units of welfare and Jill has 75. The ex ante planner now confronts a new world in which Jill's prospects from here are much worse than Jack's. She will want to do something about it, such as proposing new risky policies that in expectation favor Jill over Jack. The ex ante planner might be described as having schizophrenic tendencies.⁴⁶ The state of affairs that arose was regarded as perfectly acceptable because at the time it was coupled with alternative prospects in which Jill would have come out much better than Jack. But now that the old set of prospects is closed off because the policy was adopted and the coin has been tossed, the resulting state of affairs no longer seems attractive to the ex ante planner, and she is moved immediately to destroy the state of affairs she was eager to construct before.

The second explicit argument that Adler and Sanchirico make in favor of the "ex post" approach to equality is based upon the "sure thing"⁴⁷ or independence principle.⁴⁸ This is a rather

⁴⁶ The planner is not committing any logical errors in seeking to move toward a state of affairs and then, when it is reached, seeking to move away from it. This is because the ex ante planner does not accord value to states of affairs directly but to prospects, which depend on contemporaneously available information. Still, the planner acts in a manner that does not seem to exhibit the temporal coherence of a dynamic plan.

⁴⁷ The term "sure thing" principle derives from LEONARD J. SAVAGE, *THE FOUNDATIONS OF STATISTICS* (2d ed. 1972).

⁴⁸ The term "independence" probably derives from Paul Samuelson's notion of "strong independence" in Paul A. Samuelson, *Probability, Utility, and the Independence Axiom*, 20 *ECONOMETRICA* 670-78 (1952).

technical argument based upon an arcane dispute in decision theory. But the essential intuition of the argument can be stated briefly. We imagine an individual making a choice between two lotteries. The two lotteries have different prizes under “heads” (call them A vs. B) but the same prize under “tails” (call it C). Suppose the person chooses the lottery that will give her Prize A under “heads”. The independence principle now makes a prediction about how the same individual will behave when confronted with a choice between two new lotteries. In these new lotteries, the prizes under “heads” remain A vs. B, but the prizes under “tails” are now something new, call it Prize D, which again is the same under either of the two lotteries. The prediction is that the individual will still choose the lottery offering the prospect of Prize A. The intuition is that since neither choice situation offered anything to choose from under “tails”, the decision must have been based upon the “heads” result, and an individual who found Prize A to be a better “heads” result in one lottery choice should continue to find Prize A the better “heads” result in the second lottery choice. Since what happens under “tails” is a sure thing not affected by the choice between lotteries, the individual will ignore what happens under “tails” and will make her decision about lotteries in a manner that is independent of the exact prize that is available under “tails”.

Importantly, the assumption is that this independence principle applies to any prizes, including prizes that themselves are lotteries.⁴⁹ If I prefer Lottery A over Lottery B, then I should prefer a compound lottery that gave me Lottery A as a prize under “heads” and any Lottery C as a prize under “tails” over a different compound lottery that gave me Lottery B as a prize under

⁴⁹ The independence principle thus applies to “mixtures” of two lotteries, as outlined in ANDREW MAS-COLELL, MICHAEL A. WHINSTON, AND JERRY R. GREEN, MICROECONOMIC THEORY 171 (1995).

“heads” and the same Lottery C as a prize under “tails”. The principle is always the same: if the lotteries (in this case compound lotteries) differ only under “heads”, then it should not matter to my preferences over those lotteries what would happen to me under “tails”, as long as I could not affect that “tails” result with my choice.

In the previous example, I implicitly assumed that individuals follow the independence principle in assessing their prospects.⁵⁰ Jack and Jill evaluated a policy that gave them a 50% chance of 130 welfare units and a 50% chance of 75 welfare units as worth $(\frac{1}{2} * 130) + (\frac{1}{2} * 75) = 102.5$ units. A person who reasons in this way will observe independence in her choices. In our earlier example, the person would view her initial lottery choice as comparing $(\frac{1}{2} * \text{Value of Prize A}) + (\frac{1}{2} * \text{Value of Prize C})$ with $(\frac{1}{2} * \text{Value of Prize B}) + (\frac{1}{2} * \text{Value of Prize C})$. She would choose the first lottery if and only if she valued Prize A over Prize B, and if she did, she would continue to choose lotteries offering Prize A regardless of whether Prize C was replaced by some alternative prize D as long as D remained a sure thing under either option.⁵¹

Adler and Sanchirico argue that an ex ante social planner will violate the sure thing principle.⁵² A slight variation on our previous example can be used to illustrate the proposition. Suppose the ex ante egalitarian social planner is confronted with the following choices. At one time, she can choose between Policy A and Policy B. Both policies produce identical results under “tails”, namely, Jack has 75 welfare units and Jill has 130. The policies differ if “heads”

⁵⁰ See notes 30-33, *supra*, and accompanying text.

⁵¹ Independence is thus implicit in the mathematical form, which involves addition of utility for the two states, rather than operations such as multiplication or division where the utility from the two states would be permitted to interact.

⁵² Adler and Sanchirico, *supra* note 30, at 336-37.

obtains, in which case Policy A produces 75 units of welfare for Jack and 130 for Jill, while Policy B under “heads” leads to 130 units of welfare for Jack and 75 for Jill. The ex ante egalitarian planner will prefer Policy B, because the prospects of the parties ex ante are equal.

But now suppose that at another time the planner must choose between Policy C and Policy D. Both policies produce identical results under “tails”, namely, Jack has 130 welfare units and Jill has 75. However, once again the policies differ under “heads”, but they differ in precisely the way the first two policies differed under “heads”. That is, under Policy C, if “heads” obtains we get 75 units of welfare for Jack and 130 for Jill, while Policy D under “heads” leads to 130 units of welfare for Jack and 75 for Jill. Now the ex ante planner will prefer Policy C over Policy D, because Policy D is the one that makes the prospects of the parties equal.

To summarize, the ex ante planner prefers Policy B over Policy A and yet prefers Policy C over Policy D. This combination of preferences is inconsistent with the sure thing principle. According to the “sure thing” or independence principle, A and B do not differ under “tails”, and therefore the choice should be made entirely on which policy produces a better outcome with regard to “heads”. Similarly, because C and D do not differ under “tails”, the choice between those two policies should be made entirely based upon their results under “heads”. So if the planner prefers A to B under “heads”, and if C and D differ from each other under “heads” in precisely the same way that A and B differ, then the planner should take the same attitude toward C and D that she took toward A and B, i.e., that D should defeat C if B defeated A. But the ex ante planner believes otherwise, so she is behaving as if her preferences did not comport with the independence or sure thing principle.

Adler and Sanchirico do not explain precisely why it is wrong for the planner to violate the independence principle.⁵³ They acknowledge the empirical evidence that experimental subjects often appear to violate it when asked to rank two different pairs of lotteries.⁵⁴ At times, Adler and Sanchirico seem to believe that the independence principle is a postulate of rational decision making, such that a person who violated the axiom would be acting irrationally⁵⁵, perhaps because of some optical illusion or cognitive error in processing a difficult choice situation.⁵⁶ But the argument they stress is that the ex ante perspective embraces the independence principle as a maxim for decision making by the individuals.⁵⁷ So they make their point as a challenge to the ex ante position to explain why it is reasonable to postulate that individuals will (or should) conform to the independence principle in evaluating risky prospects but that the social planner will not (or should not) similarly conform.

After making their two explicit arguments for the ex ante approach, Adler and Sanchirico make another argument implicitly. That argument is that the ex post approach better comports with concrete moral intuitions about how to handle examples in which the two approaches would

⁵³ The independence principle was originally used as an axiom to derive the model of expected utility maximization in JOHN VON NEUMANN & OSKAR MORGANSTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* (1944).

⁵⁴ The most famous experiments inconsistent with the independence principle come from M Allais, *Le Compartement del'tiomme rationnel devant le risque, critique des postulats et axiomes de l'ecole Americane*, 21 *ECONOMETRICA* 503 (1953).

⁵⁵ This was also the position taken in *Weighing Goods*, *supra* note 34, at 92 (“expected utility theory intends to describe the preferences a person would have if she were rational.”)

⁵⁶ Adler and Sanchirico, *supra* note 30, at 338 (sure-thing principle is normative, not descriptive).

⁵⁷ Adler and Sanchirico, *supra* note 30, at 338.

produce different results.⁵⁸ Suppose that there is a risk that some terrible event, perhaps a flood or a terrorist incident, could happen to either Jack or Jill. Ex ante, however, suppose that the likelihood of the event's happening to Jack or Jill was equal.⁵⁹ The ex ante perspective would say that there is no egalitarian problem to be solved, because the parties faced equal prospects.⁶⁰ The ex post perspective would say that the actual world that obtains after the uncertainty was resolved was one of palpable inequality, which does not go away as a social evil just because the opposite inequality could have arisen in some different state. The planner should be concerned about such an inequality, either by taking ex post redistributive steps or by ex ante adopting policies that lowered the risk that such an unequal state would occur.

Adler and Sanchirico do present these examples, but only to demonstrate that there would be real world significance in the ex ante vs. ex post forms of egalitarian reasoning. They do not directly argue that the ex post approach does a better job of handling these examples than the ex ante approach, and choose to rest the case for the ex post approach on the problems of dynamic inconsistency and violations of the sure thing principle. Nevertheless, the examples exert some rhetorical force of their own. Isn't it right that the ex post inequality is a social problem which does not disappear merely because it arose out of a condition of ex ante equality? After all, one

⁵⁸ Adler and Sanchirico, *supra* note 30, at 350-63.

⁵⁹ One issue here concerns the metaphysical connection between the person in the ex ante and the ex post positions. The assumption is that the same person is involved at both time stages, but this idea has been challenged with the reductionist view that a person is morally better considered a succession of separate person-stages. See DEREK PARFIT, *REASONS AND PERSONS* 333-34 (1984).

⁶⁰ This does not mean that the ex ante approach would support the resulting inequality. It would not if the parties ex ante would have wanted to insure the loser against that result.

might say, people dwell in the actual world, not in the hypothetical world of alternatives that might have been. Isn't it wrong for those of us who got lucky in the actual world to deny any responsibility to rectify actually existing inequalities just because the results could have turned out the other way?⁶¹

The remainder of this article seeks to defend the ex ante efficiency norm against the egalitarian challenge. Part II addresses the objection of dynamic consistency. Part III responds to the argument that the ex ante approach violates the sure thing principle. And Part IV deals with the contention that the ex post approach better comports to moral intuitions about concrete examples.

II. Dynamic Consistency

A good example to make the dynamic consistency problem concrete is the issue of pain and suffering insurance. In general, insurance is a very sensible institution from an ex ante point of view; each party pays moderate-utility dollars in premiums for the prospect of receiving high-

⁶¹ An important strand within egalitarian thought sees a social role in removing the effect of luck on distributions. See Richard J. Arneson, *Luck Egalitarianism and Prioritarianism*, 110 ETHICS 339 (2000). However, the ex ante efficiency approach does not believe in letting luck play itself out if the parties in the position before the event occurred would have wanted to insure against that risk.

utility dollars in scenarios of need.⁶² However, pain and suffering insurance is unusual in this regard, in that a person in pain does not necessarily derive high utility from marginal dollars.⁶³ We will ignore issues such as pain medicine, where insurance is much more sensible; assume that people have purchased all such rational insurance or that the state has provided it through a social insurance scheme. We will also ignore complications arising from the advanced payment of premiums; in the system under consideration, the person not in pain is simply called upon at the time the state is revealed to provide a subsidy to the person in pain.⁶⁴

Pain and suffering insurance, either public or private, is very unusual.⁶⁵ People are awarded monetary sums for pain and suffering caused by tortious conduct, but this is usually either defended on deterrence grounds or attacked as an irrational system of loss spreading.⁶⁶ Let us assume the truth of the conventional wisdom that pain and suffering insurance provides dollars in low-utility-of-money settings. For concreteness, assume that Jack and Jill begin with

⁶² See Mas-Colell, Whinston, and Green, *supra* note 49, at 182 (risk aversion is equivalent to concavity of utility function).

⁶³ See Steven P. Croley & Jon D. Hanson, *The Nonpecuniary Costs of Accidents: Pain-and-Suffering Damages in Tort Law*, 108 HARV. L. REV. 1785, 1797 (1995) (acknowledging that the conventional wisdom is that pain and suffering compensation is not a wise form of insurance but arguing that rational people might after all insure against it).

⁶⁴ Advanced payments might be necessary due to liquidity concerns. If so, this would make it harder for the planner to change directions after the tragedy occurred. As such, the assumption that premiums are not paid in advance is made to present the best possible case for the dynamic inconsistency objection.

⁶⁵ See George L. Priest, *The Current Insurance Crisis and Modern Tort Law*, 96 YALE L.J. 1521 (1987) (using economic logic to explain lack of pain and suffering insurance).

⁶⁶ See David Leebron, *Final Moments: Damages for Pain and Suffering Prior to Death*, 64 N.Y.U. L. REV. 256, 273-74 (1989) (insurance coverage for pain and suffering unlikely given economic incentives).

100 welfare units each, and that the parties know that with 50% probability exactly one of them will experience pain lowering his or her welfare to 20 units. However, in that situation the person in pain can provide monetary transfers that reduce the transferor's welfare by 40 units but increase that of the person in pain by 25 units. Suppose further that the status quo is defined by a system of public pain and suffering insurance, and that the ex ante planner is considering a new policy of repealing that coverage and having the parties "go bare" regarding pain and suffering.

How should the planner evaluate the wisdom of repealing pain and suffering insurance? Under the status quo of insurance, Jack and Jill each have a 50% chance of being the person in pain who is given insurance ($20+25=45$ welfare units) and a 50% chance of being the person not in pain who provides the insurance ($100-40=60$ welfare units). For now, we will continue to assume that the individuals are risk neutral with regard to welfare risk and that they obey the independence principle; these assumptions will be discussed in detail in the next section.⁶⁷ Under these assumptions, Jack and Jill evaluate their prospects under the status quo as $\frac{1}{2}*45 + \frac{1}{2}*60 = 52.5$ units.

Under the policy proposal of repeal, Jack and Jill each have a 50% chance of being the person in pain without insurance (20 welfare units) and a 50% chance of being the person not in pain and not providing insurance (100 welfare units). Always assuming independence and welfare risk neutrality, the parties evaluate their prospects under repeal as $\frac{1}{2}*20 + \frac{1}{2}*100 = 60$ units. In short, both Jack and Jill see their prospects as improved (from 52.5 to 60) by the repeal of pain and suffering insurance. Repeal is ex ante efficient, though ex post one of the parties will end up worse off as a result.

⁶⁷ See notes 104-148, *infra*, and accompanying text.

How would the ex ante egalitarian planner evaluate the wisdom of repealing pain and suffering insurance? Suppose as before that the planner sees social prospects as consisting of Jack's prospects plus Jill's prospects minus one-half the difference between their prospects. Under the status quo of insurance, the planner sees a social value of $52.5+52.5-\frac{1}{2}(52.5-52.5)=105$ units. Under the policy proposal of repeal, the planner sees a social value of $60+60-\frac{1}{2}(60-60)=120$ units. The ex ante egalitarian planner will, as always, want to implement the ex ante efficient policy.

But now imagine that the coin is tossed and that we discover that Jack is in pain and Jill is not. The ex ante planner has a new choice to make in a different informational setting. She can reinstate the pain subsidy scheme and require Jill to pay money costing her 40 welfare units and improving Jack's prospects by 25 units. The ex ante egalitarian planner will find reinstating the system to be a socially attractive option. Reinstatement generates a social value of $(100-40)+(20+25)-\frac{1}{2}[(100-40)-(20+25)] = 97.5$ units. Refusing the transfer creates a social value of $100+20-\frac{1}{2}(100-20)= 80$ units. Before the state was revealed, the ex ante egalitarian planner wanted to have the parties go bare, but after the state is revealed, the planner wants to reinstate the system of subsidies. This in essence is the dynamic consistency problem.⁶⁸ The explanation is simple. Before the state was revealed, going bare was consistent with equality of prospects, but once the state was revealed, failure to subsidize resulted in unequal prospects.

Before expressing pity for the oscillating behavior of the ex ante egalitarian planner,

⁶⁸ Peter Hammond has called this problem the need for "continuation consistency" in models, i.e., for the action it is rational to plan in advance to be the same action it is rational to take ex post. See Peter J. Hammond, *Consequentialist Decision Theory and Utilitarian Ethics*, EUI WORKING PAPER NO. 91/43, 11 (1991).

however, it is useful to remember the ubiquitous character of the dynamic consistency problem. It is by no means limited to the ex ante egalitarians; indeed, I believe it affects any model in which the planner has no sense of historical entitlements but simply seeks to promote a good set of consequences from wherever she happens to be.

Consider, for example, a utilitarian planner, who does not care about equality as such⁶⁹ but only as an instrument⁷⁰ of maximizing the total or average utility of the population.⁷¹ At Time One the planner will find it in her interest to announce a variety of policies designed to elicit useful behavior from the citizens.⁷² People who develop property can be assured that it will not be confiscated; people who invent new technologies can receive patents, people who save and invest today will be permitted to consume tomorrow, people who work hard to develop marketable skills today will be allowed to make profitable use of those skills tomorrow, people who commit harmful crimes today will be punished tomorrow, and the like.⁷³ The planner can at least attempt to be sincere in announcing these policies, but eventually, the actions are

⁶⁹ See JAN NARVESON, *MORALITY AND UTILITY* 14 (1967) (goal of utilitarianism is to produce as much good as possible, “no matter where it is found, nor whose it is.”)

⁷⁰ It is not necessarily true that equality would enhance utilitarian objectives. Apart from its effect on incentives, it is also possible that some people are much better at transferring resources into utility than others and on this theory would be entitled to a disproportionate share of resources. See *Weighing Goods*, *supra* note 34, at 176 (arguing that people do not have the same functions for converting income into utility).

⁷¹ See A. C. PIGOU, *THE ECONOMICS OF WELFARE* (4th ed. 1932) (utilitarians favor equalization on instrumental grounds).

⁷² See generally R.H. Strotz, *Myopia and Inconsistency in Dynamic Utility Maximization*, 23 *REV. ECON. STUD.* 165 (1955-1956).

⁷³ Readers who are skeptical of the utility of these policies are encouraged to substitute their own examples of multi-stage policies that are justified by utility only if carried out faithfully in the later period.

undertaken and a new status quo (Time Two) is created.⁷⁴ From this new status quo, all prior actions are bygone and everything created thus far is merely a resource to be distributed in a manner than maximizes utility from Time Two forward.⁷⁵ The problem for the utilitarian is fundamentally the same as the problem for the ex ante egalitarian – as the future becomes the past, it changes dramatically from being centrally relevant to being completely irrelevant to the future-oriented consequentialist calculation.

In all these cases, what is needed is for the planner not simply to announce a policy but to *commit* to it. Indeed, it is only if the planner can make a credible commitment to carry out announced policies of property protection and criminal punishment that the announcement of the policy ex ante would be justified by utility. Similarly, in the case of the ex ante egalitarian, it is only if the planner has the ability to commit to refrain from pain and suffering redistribution that she is able to adopt an initial policy that can succeed in raising the absolute value of prospects without jeopardizing equality of prospects.

One might argue, however, that the ex ante planner is not able to make the necessary commitment.⁷⁶ The planner is simply determined to embrace the particular objective (say, ex ante egalitarianism) at every moment in time, and everyone knows that the planner is determined

⁷⁴ See Keith N. Hylton, *The Jurisprudence of Slavery Reparations: Slavery and Tort Law*, 84 B.U. L. REV. 1209, 1255 (discussing short-term incentive to expropriate property).

⁷⁵ Robert Nozick objected to moral systems, such as that of Rawls, which regarded resources as manna from heaven that could be distributed in accordance with end state principles. See ROBERT NOZICK, *ANARCHY, STATE, AND UTOPIA* (1974).

⁷⁶ The charge of inability to explain commitment is often made to direct consequentialist philosophies more broadly. See, e.g., Bernard Williams, *Integrity*, in *UTILITARIANISM: FOR AND AGAINST* 108-17 (1973).

in that way, so the necessary commitment is not possible. Put another way, if the right thing to do is to promote ex ante egalitarianism, then it is not moral to commit oneself to doing something that at the time it is to be done would fail to promote ex ante egalitarianism.⁷⁷

There are potential philosophical solutions to this dilemma, or at least ways to ameliorate its force. One can modify consequentialism with a requirement to respect historical entitlements or rule-based constraints.⁷⁸ Many “nonconsequentialist” ideas, such as private property rights⁷⁹, rule utilitarianism⁸⁰, retributive punishment⁸¹, or the obligation to keep intrapersonal vows and interpersonal promises⁸², are precisely the kinds of institution that the “consequentialist” needs to

⁷⁷ One question is whether commitment can be obtained as part of a decision procedure that itself is justifiable on consequentialist grounds. See Alastair Norcross, *Consequentialism and Commitment*, 78 PAC. PHIL. Q. 380 (1997).

⁷⁸ The idea that consequentialism is the core error in the dynamic consistency problem is discussed in Mark J. Machina, *Dynamic Consistency and Non-Expected Utility Models of Choice under Uncertainty*, 27 J. ECON. LIT. 1622, 1624 (1989)

⁷⁹ See generally Richard Epstein, TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN (1985)

⁸⁰ See Brad Hooker, *Rule Consequentialism*, STANFORD ENCYCLOPEDIA OF PHILOSOPHY (available at <http://plato.stanford.edu/entries/consequentialism/rule>)

⁸¹ See generally MICHAEL MOORE, PLACING BLAME: A GENERAL THEORY OF CRIMINAL LAW (1997).

⁸² A sizeable philosophical literature exists on the question of whether a rational individual can commit to follow a rule even when it would not continue to be in the individual's interest to follow through on it ex post. Leading contributions affirming the possibility of such rational precommitment include EDWARD F. McCLENNEN, RATIONALITY AND DYNAMIC CHOICE: FOUNDATIONAL EXPLORATIONS (1990); David Gauthier, *Commitment and Choice: An Essay on the Rationality of Plans*, in ETHICS, RATIONALITY, AND ECONOMIC BEHAVIOUR 217-43 (Francesco Farina, Frank Hahn & Stefano Vannucci, eds. 1996).

be able to carry out a coherent long-term consequentialist program.⁸³ Conversely, if these philosophical norms are all nonsense on stilts⁸⁴, the consequentialist ironically becomes her own worst enemy with her minute-by-minute recalculations of future consequences that defeat long term consequentialist planning. The philosophical puzzle, however, is to explain how these institutions, if they are ultimately justified because of their contribution to a consequentialist program, can be superimposed as obstacles to the realization of consequentialist objectives at a given moment. I do not have an answer to that dilemma, but I believe that the issue is important and that the people who are trying to find space for such indirect consequentialism approaches are on the right track.

Fortunately, for practical purposes, there are ways of coping with the dynamic consistency problem short of fundamental moral revision of consequentialism. Let us assume that the planner is hell-bent on promoting ex ante egalitarianism at every single moment in time.⁸⁵ What saves the process from dynamic anarchy is that the planner is almost never in a truly ex post situation. We may be ex post in deciding what to do about the fact that Jack but not Jill is suffering pain. The problem, however, is going to come up many more times in the

⁸³ I have discussed the question of indirect pursuit of good consequences elsewhere. See Christopher T. Wonnell, *Problems in the Application of Political Philosophy to Law*, 86 MICH. L. REV. 123 (1987); Christopher T. Wonnell, *Four Challenges Facing a Compatibility Philosophy*, 12 HARV. J. LAW & PUB. POLY. 835 (1988).

⁸⁴ It has been argued that justice or fairness considerations have no proper role in a welfarist normative system. See generally Louis Kaplow and Steven Shavell, *The Conflict Between Notions of Fairness and the Pareto Principle*, 1 AM. L. & ECON. REV. 63, 65-66 (1999).

⁸⁵ The issue of the time from which one asks whether a change would be ex ante efficient is addressed in Daniel A. Farber, *Economic Efficiency and the Ex Ante Perspective*, in THE JURISPRUDENTIAL FOUNDATIONS OF CORPORATE AND COMMERCIAL LAW 54, 61 (Jody S. Kraus & Steven D. Walt eds., 2000).

future.⁸⁶ And even if the specific issue of pain insurance were a one-time proposition, the general problem of multi-stage policies is going to come up again and again.

The planner should implement a policy and simultaneously “commit” to seeing the policy through to completion. For our purposes, we can assume that the commitment carries no direct moral force, but is merely a marker designed to signify that the policy being announced is intended as a multi-stage one. Indeed, in our simple model with calculable risk but no uncertainty⁸⁷, the planner ex ante would want to embrace a policy of *forever* refraining from providing pain and suffering compensation.⁸⁸

However, the arrangement only succeeds in improving the current prospects of the parties if they know that the planner will follow through on the policy after the state is revealed. So the question is whether the planner ex ante can make such a commitment with respect to her own decisions ex post.⁸⁹ Suppose that the coin has been tossed, that Jack has wound up in pain and Jill has not, and that the problem of how to deal with pain is going to recur a large number of times in the future. What should the planner do in this intermediate position that is “ex post”

⁸⁶ The idea that repeat play can sustain equilibria not possible with single iterations has been observed with regard to prisoner’s dilemma problems. See, e.g., David S. Law, *Appointing Federal Judges: The President, the Senate, and the Prisoner’s Dilemma*, 26 CARDOZO L. REV. 479, 502-04 (2005).

⁸⁷ This distinction was emphasized in FRANK H. KNIGHT, RISK, UNCERTAINTY, AND PROFIT (1964).

⁸⁸ The desire to make a permanent commitment follows from the assumption that there is no genuine uncertainty, but merely scenarios with objective probabilities. In fact a real planner would need to hedge any plan to meet truly new information.

⁸⁹ The problem of making commitments credible is a staple of the industrial organization literature. See, e.g., GARY J. MILLER, MANAGERIAL DILEMMAS: THE POLITICAL ECONOMY OF HIERARCHY ch.5 (1992).

with respect to the first instance of pain but “ex ante” with respect to the long string of future instances?

The planner in this intermediate position is tempted to continue the policy of a permanent ban on pain and suffering compensation but to create an exception for instances of already realized results. In fact, however, this policy option is not available, because the planner in this intermediate position would not be able to “commit” to such an attitude with respect to her future self. She knows that the planner at the third stage would face a similar environment and a similar “temptation” to redress unequal prospects arising from past realizations. In short, the policy of creating “exceptions” for past pain but refraining from insurance for future pain cannot be best, because it could only be best if the planner knew that the future planner, whose essential decision problem is the same, would not want to create exceptions.

The intermediate planner has two effective policy options. One is to redress the past inequality and forget about making any commitments with respect to future instances. The other is to carry out the previous commitment and enforce the noncompensation policy in all instances. Dynamic consistency is possible as long as the latter policy makes the intermediate planner “happier” (i.e., it makes Jack’s prospects plus Jill’s prospects minus one-half the difference between their prospects larger).⁹⁰ Although this is not certain, it is quite likely. The deadweight costs to the absolute levels of Jack’s and Jill’s prospects from a compensation policy are *cumulative*. If Jack and Jill are looking forward to hundreds of incidents of pain with wasteful

⁹⁰ The idea that a planner is a person with tastes and can be made happy is potentially quite misleading. Real world planners are of course people, but qua people they should count morally only as individuals. It may be better to view the planner qua planner as a computer algorithm that does the right thing but has no personal tastes at stake.

negative-sum compensation, their gains (equally shared ex ante) from the policy of noncompensation are likely to exceed the social costs, i.e., the egalitarian costs, of failing to redress the past inequality. Moreover, the problem does not get worse with each iteration. The egalitarian costs of failing to compensate are *not* cumulative.⁹¹ If anything, the problem of unredressed inequalities from previous realizations gets smaller as the law of large numbers operates on changes that ex ante were in the interest of everyone.⁹² So the intermediate planner has no reason to fear that if her own calculation supports staying with the permanent non-compensation policy (as long as it is credible), the third or fourth stage of the planner's decision will involve a calculation less favorable to that policy.

In short, the originally announced policy of a permanent ban on compensation is indeed the best option that the intermediate planner actually has available, and because it is, the original "commitment" by the ex ante planner as to how the intermediate planner would behave is justified. And because the case for violating the past commitment is not getting stronger, the intermediate planner is able to make her "commitment" about the third stage planner's behavior and have it be fulfilled. In this way, it is possible to maintain dynamic consistency of approach over time.

It is true that this solution works only on certain assumptions. For one thing, it is

⁹¹ It is possible that one person would always be the person in pain so that the inequalities would increase over time. But given the assumption that ex ante chances are equal, probability theory suggests that it is far more likely that the inequality would diminish over time as the random effects were distributed.

⁹² The law of large numbers states that "as the number of identically distributed, randomly generated variables increases, their sample mean (average) approaches the theoretical mean." *Law of Large Numbers*, ENCYCLOPEDIA BRITANNICA, available at <http://www.britannica.com>.

imperative that there not be a “last period”.⁹³ If there were a last period, the planner’s optimal solution in that period would be to redress the inequalities from the earlier realizations. That would also taint the penultimate period, since the planner would know that she herself in the last period would compensate, so it would not be possible to commit to noncompensation, in which case the best policy in that period would also be to redress inequalities of previous realizations.⁹⁴ By similar logic, the planner at all stages could not “commit” to a policy of noncompensation. In the language of game theory, the noncompensation policy would not be a subgame perfect equilibrium.⁹⁵

Another necessary assumption is that there must not be a steep discount rate on future welfare.⁹⁶ If there were, rectifying present inequalities from past realizations of the state might dominate over any distant gains that were possible from sticking with the noncompensation policy. So at each stage the planner would face a stronger “temptation” to abandon the noncompensation scheme and redress earlier unequal realizations, and the planner would also know

⁹³ Experimental evidence supports the proposition that cooperation can disappear in the last period on an experiment. See John O. Ledyard, *Public Goods: A Survey of Experimental Research*, in THE HANDBOOK OF EXPERIMENTAL ECONOMICS 143 (Kasel & Roth, eds. 1995).

⁹⁴ The tendency for cooperative equilibria to unravel when last period problems spread to earlier periods that anticipate the last period is addressed in Frank Easterbrook, *Discovery as Abuse*, 69 B.U. L. REV. 635, 642 (1989).

⁹⁵ See MARTIN J. OSBORNE & ARIEL RUBINSTEIN, A COURSE IN GAME THEORY 97 (1994) (“The notion of subgame perfect equilibrium eliminates Nash equilibria in which the players’ threats are not credible.”)

⁹⁶ The importance of discount rates in the ability to sustain equilibria is stressed in the “folk theorem” stating that any individually rational outcome can be an equilibrium with low enough discount rates. See Franklin M. Fisher, *Games Economists Play: A Noncooperative View*, 20 RAND J. ECON. 113, 116 (1986).

that future planners would face that stronger temptation, which would affect their own ability to make commitments.

The assumption that the discount rate on the future is not a steep one is reasonable.⁹⁷ Monetary awards in the future are discounted because money available today can earn interest, but the issue is not a discount rate for money but for welfare itself.⁹⁸ Individuals can discount their own future welfare because of shortsightedness and failure to empathize with their future selves.⁹⁹ And real world governments can discount the future welfare of their citizens because the citizens themselves are shortsighted or because future generations are not current voters.¹⁰⁰ But the issue here is whether one ought to build into a proper social welfare function a steep discount for future welfare.¹⁰¹ Most of these descriptive arguments for discounting future welfare are not very compelling as normative justifications.¹⁰²

⁹⁷ The propositions in this paragraph are tentative. If discounting future pain is appropriate, then there will be some dynamic inconsistency in any consequentialist regime, but the size of the effect will be moderate if the discount rate is not steep.

⁹⁸ It has been argued that the proper procedure for discounting is to convert future utility into future dollars, convert present utility into present dollars, and then convert future dollars into present dollars by discounting at the market rate of return on capital. See Louis Kaplow, *Discounting Dollars, Discounting Lives: Intergenerational Distributive Justice and Efficiency*, NBER WORKING PAPER No. 12238 (2006).

⁹⁹ On the other hand, Derek Parfit has argued that discounting the future is not irrational. See *Reasons and Persons*, *supra* note 49, Part II.

¹⁰⁰ See MICHAEL TONRY & DAVID P. FARRINGTON, STRATEGIC APPROACHES TO CRIME PREVENTION, VOL. 19, CRIME AND JUSTICE: A REVIEW OF RESEARCH (1995).

¹⁰¹ For an argument that discounting the future is irrational see Ross Harrison, *Discounting the Future*, PROCEEDINGS OF THE ARISTOTELIAN SOCIETY 82 (1981-82).

¹⁰² See Jevons, *supra* note 32, at 72-73 (“To secure a maximum benefit in life, all future pleasures or pains should act upon us with the same force as if they were present, allowance being made for their uncertainty. . . . But no human mind is constituted in this perfect way: a

To the extent that there are last period problems or discounting, then it is true that there will be some dynamic inconsistency in the ex ante approach (and, indeed, in all consequentialist approaches). A perfect solution to the problem probably will require some modifications to consequentialism along the lines discussed before. But there is reason to believe that even without these philosophical improvements the dynamic inconsistency problem will be moderate. Societies are rarely in their last period regarding any particular policy issue such as pain insurance, and are even less likely to be in their last period regarding the desirability of multistage policies more generally. If we knew that an asteroid was going to wipe out the earth in the year 2020, it would indeed be difficult to implement multistage policies with any credibility as long as everyone knew that the planner was a thoroughgoing consequentialist. In such a world, there would be more urgency to resolving the philosophical issues about the moral reality of historical entitlements than there is in our ongoing game.¹⁰³

III. The Sure Thing Principle

As noted earlier, Adler and Sanchirico argue that the ex ante approach violates the “sure

future feeling is always less influential than a present one.”)

¹⁰³ Ironically, in such a last period world, one might want to abandon democracy precisely because social order was possible only if people felt secure that the government would not be accountable to a public taste that bygones be bygones as the end drew nearer.

thing” principle.¹⁰⁴ The short version is that in deciding what kind of a result the planner wants for the state “heads”, she is going to care what is going to happen under “tails” even if she cannot affect it. If Jack wins under “tails” she is going to want approaches that favor Jill under “heads”. But if Jill wins under “tails” the very same result under “heads” is going to look unattractive in that it exacerbates inequality of prospects.

The complete argument was that the ex ante approach is committed to the independence or sure thing principle with respect to individuals, and that there is no good reason why individuals should embrace the maxim but the planner should not. I want to argue against both premises of this argument. There is nothing in the logic of the ex ante approach that involves any commitment to the sure thing principle for individuals. And even if there were, there would be good reason for the planner to reject the principle with regard to choosing social welfare functions.

Let us begin with the independence principle for individuals. We know from experimental evidence that individuals often appear to violate that principle, and in systematic ways.¹⁰⁵ The principal finding is that individuals who evaluate compound lotteries are inclined to choose options that give them less risk under “heads” if the prize that is a sure thing under “tails” is more attractive.¹⁰⁶

¹⁰⁴ See notes 48-57, *supra*, and accompanying text.

¹⁰⁵ See Graham Loomes and Robert Sugden, *The Importance of What Might Have Been*, in *PROGRESS IN UTILITY AND RISK THEORY* 219-35 (1984) (discussing “complementarities” between alternative possible states of affairs).

¹⁰⁶ See Machina, *supra* note , at 1630 (describing “a swing in preference from more risky to less risky sublotteries in one branch of a compound lottery as the sublottery in the *other* branch improves. . .”)(emphasis in original).

One way to deal with these findings is to exclude them as irrational, perhaps the way one might be inclined to deal with individuals who did not exhibit transitivity in their pair-wise preferences over objects.¹⁰⁷ Arguably the problems are simply complex and people make mistakes, although this hypothesis would not necessarily predict systematic errors in any particular direction. Another possibility is that there is a kind of optical illusion that causes people to miss the fact that they are being inconsistent.¹⁰⁸ If irrationality is the reason for the violation, then there is indeed good reason for the ex ante theorist to stay with the sure thing principle.¹⁰⁹ After all, in our exposition of the theory we are working with objective “welfare”¹¹⁰ rather than subjective “utility” or preference satisfaction as the maximand.¹¹¹ If the planner’s goal is to promote the actual welfare of the individual, it would not be wise to give people a particular policy that they prefer only because they cannot think through the true probability structure of the problem they face.

The problem is that there can be good reasons for individuals to violate the sure thing

¹⁰⁷ See Mas-Collell, Whinston, and Green, *supra* note 49, at 6 (arguing that transitivity of preferences “goes to the heart of the concept of rationality.”)

¹⁰⁸ This “normative” response to violations of independence is presented in LEONARD SAVAGE, *THE FOUNDATIONS OF STATISTICS* (1954).

¹⁰⁹ It has been argued that the independence axiom follows from the fact that the two events never arise simultaneously. See Paul Samuelson, *Probability, Utility, and the Independence Axiom*, 20 *ECONOMETRICA* 670 (1952)(“Either heads *or* tails must come up: if one comes up the other cannot.”)(emphasis in original).

¹¹⁰ A complication here is that what would be good for a rational person is often not good for people as they are. See JAMES GRIFFIN, *WELL-BEING* 11 (1986).

¹¹¹ For a discussion of ambiguities in the concept of “welfare”, see Ronald Dworkin, *What is Equality? Part 1: Equality of Welfare*, 10 *PHIL & PUB. AFF.* 185 (1981).

principle.¹¹² Suppose that I was certain to win \$1 million under “tails”, and I was offered a choice between two different policies under “heads”. One policy involved \$1 million with certainty (if heads came up); the other involved equal chances of getting \$0 or \$10,000,000 if heads came up, i.e., a second, quite stressful coin flip. Experimental subjects are less likely to pick the risky option under “heads” when the tails award is \$1,000,000 for sure than when it is \$100 for sure.

It is fairly easy to see some good reasons for this preference structure.¹¹³ If I am guaranteed \$1 million under tails, then the \$1 million prize under heads accords me certainty and avoids anxiety before the choice takes place.¹¹⁴ In addition, I do not need to plan for two different lives, one with great wealth and one with poverty, where one set of plans would be wasted. After the fact, I would know that it was my own choice that was responsible for my own poverty, which would entail great feelings of regret¹¹⁵, whereas if the sure thing result under tails had been only \$100 I could not know for certain that I was responsible for my poverty.

¹¹² Some reasons are discussed in Alan S. Manne, *The Strong Independence Assumption*, 20 *Econometrica* 665 (1952); Amartya Sen, *Rationality and Uncertainty*, 18 *THEORY AND DECISION* 109 (1985).

¹¹³ A criticism of the view that an abstract notion of “rationality” should be imposed on preferences over lotteries is presented in Mark Machina, *Choice Under Uncertainty: Problems Solved and Unsolved*, *J. Econ. Perspectives* 121 (1987).

¹¹⁴ The idea of uncertainty aversion was argued in Daniel Ellsberg, *Risk, Ambiguity and the Savage Axioms*, 75 *Q.J. ECON.* 643 (1961).

¹¹⁵ It has been argued that feelings cannot constitute a true interaction between alternative states of affairs, since those feelings necessarily arise in a given state. See *Weighing Goods*, *supra* note 34, at 110. The point, however, is that the feelings arise only because of a choice situation in which specific alternatives were present. That precise state of affairs will not occur again without the same choices, and therefore one cannot use such feelings to predict results in different lotteries.

The usual answer to these objections is that feelings of anxiety and regret are properly considered part of the true “prizes” that the parties win in the lotteries.¹¹⁶ This move, however, is ultimately too powerful and winds up emptying the sure thing principle of empirical content.¹¹⁷ The purpose of the independence principle is to infer the preferences that people will have over one set of lotteries from the preferences they have over another set. We should be able to alter the result under “tails” and, as long as it is unaffected by choice, it should not influence preferences over the lotteries one can win as prizes under “heads”. But when we alter the result under “tails” we change the structure of anxiety, regret, and planning costs from the various options available under “heads”. If these changes are conceptualized as changes in the prizes, we do not get the opportunity to study how people respond when the very same prizes appear in different lottery options.¹¹⁸

An analogy might be drawn to consumer theory.¹¹⁹ Suppose that I wanted to prove that the tastes for peanut butter and jelly were independent. A critic might point to empirical evidence that people are more attracted to peanut butter when they have jelly as well, so that the tastes are not independent. One response might be to define “the taste of peanut butter when

¹¹⁶ See *Weighing Goods*, *supra* note 34, at 107 (presenting an argument for redefining prizes).

¹¹⁷ Broome addresses this problem under the label of the “rectangular field assumption.” *Id.* at 115-17.

¹¹⁸ Mark Machina has stressed the importance of defining the items of choice in physical terms rather than in terms of people’s mental reactions. See Mark Machina, “*Rational*” *Decision Making Versus “Rational” Decision Modeling*, 24 J. MATH. PSYCH. 167, 173 (1981).

¹¹⁹ See Machina, *supra* note 78, at 1661-62 (discussing attempts to save separability of preferences in consumer theory by redefining nature of commodities consumed).

mixed with jelly in a two-to-one ratio” as a separate commodity; indeed, every possible combination of peanut butter and jelly as a separate commodity. If this were done, however, one would no longer be making an empirical claim about independence, because every time we tried to vary the amount of peanut butter for a given amount of jelly we would have a different commodity. There would be no opportunity to test how the same commodity would be evaluated differently depending on the presence or absence of other commodities.¹²⁰

In many ways, it is liberating to be free of the sure thing principle. One point is that the sure thing principle leaves no room for people to have preferences over risk taking itself.¹²¹ If the sure thing principle obtains, the only way to explain why one person takes more risks than another is that she must derive more utility from the positive state or less disutility from the negative state than the risk averse person. That does not seem true to experience. Some people are philosophically or temperamentally opposed to gambling, which need not stem from their inability to appreciate bliss or their greater sensitivity to downside pains. Other people enjoy risk as such, finding a challenge and a thrill in the very fact of uncertainty. Those people are not necessarily happier than others when given a certain and high reward. There also can be an existential connection between upside and downside risk. An astronaut who would hate to die in a skiing accident might regard a death in space that was connected with her upside plans as an

¹²⁰ As a limiting case, every combination of ordinary commodities could be treated as an exotic “commodity” of its own, and in that case one simply could not consume two “commodities” simultaneously and the issue of the dependence or independence of sets of commodities would simply disappear.

¹²¹ See John Harsanyi, *Bayesian Decision Theory and Utilitarian Ethics*, 68 AM. ECON. REV. 223, 224 (1978) (independence axiom presupposes that “the decision maker has no specific utility or disutility for gambling as such. . .”)

acceptable risk. Indeed, it seems fair to say that a person's attitude toward risk is an important part of her personality, and not a purely mechanical or mathematical result of previously determined attitudes toward end states.¹²²

A related point is that abandoning the independence principle makes it possible to speak of risk aversion with respect to utility or welfare.¹²³ Suppose that we observe people being risk averse with respect to money. Is that because dollars at the high end do not buy as much happiness or welfare as dollars at the low end, because the person is risk averse with respect to her own utility¹²⁴ or welfare¹²⁵, or both?¹²⁶ The traditional assumption is that people act to maximize their expected utility¹²⁷ in the mathematical sense of expectation, so a 50% chance of

¹²² Some attitudes toward risk might be discounted as irrational, for example preferences arrived at by refusing to face the reality of the downside possibilities. It does not seem plausible, however, that there is only one reasonable preference structure toward welfare risks, when it is acknowledged that tastes in general can vary reasonably.

¹²³ It has been argued that "utility" levels are simply defined as the quantities for which a rational person would seek to maximize its expected value. See Hammond, *supra* note 68. This makes risk neutrality tautological rather than empirical, and in any event cannot work if people care about the entire distribution of utility levels.

¹²⁴ "Utility" is sometimes defined in a purely formal manner, as that which a rational person will seek to maximize. See Weighing Goods, *supra* note 34, at 66 ("By 'the utility of A' I mean the number assigned to A by a function that represents an ordering, and nothing else.")

¹²⁵ Derek Parfit argues that "what we ought . . . to do is the act whose outcome has the greatest *expected* goodness." Parfit, *supra* note 59, at 25.

¹²⁶ John Rawls argued that risk neutrality in utility would be necessary for parties in the initial position to choose the principle of average utility. See JOHN RAWLS, A THEORY OF JUSTICE 165 (1971).

¹²⁷ There is a question about whether "utility" is itself defined merely as what people seek to maximize, or is given a more concrete meaning such as pleasure or happiness. For the latter view, see Jevons, *supra* note 32, at 99; ALFRED MARSHALL, PRINCIPLES OF ECONOMICS 843 (8th ed. 1920).

100 utils and a 50% chance of 200 utils is always treated by everyone as the equivalent of a certain 150 utils.¹²⁸ We really have no direct empirical evidence for this, but if people's behavior with regard to lotteries could be accurately predicted by postulating fixed cardinal¹²⁹ values for the utility of particular prizes together with welfare risk neutrality, that would admittedly be strong circumstantial evidence in support of the hypothesis.¹³⁰ Since people do not in fact follow the independence principle, there is no reason to reject the common sense notion that some people are simply more risk averse than others with respect to welfare, or that people might be more risk averse with respect to their welfare at certain welfare levels than at others.

Let us now move to the second prong of Adler and Sanichirico's argument. Assume, contrary to what has been said so far, that a rational individual will always observe the independence or sure thing principle in calculating her own advantage. Would it follow that a social welfare function should follow the sure thing principle as well?

The ex ante planner would say that she has good reason to reject the sure thing principle in selecting a social welfare function. If Jack is sure to win under "tails", that provides a reason

¹²⁸ The earliest statement of expected utility theory was Daniel Bernoulli, *Exposition of a New Theory on the Measurement of Risk*, 22 *ECONOMETRICA* 22 (Louise Summer, trans. 1954) (first published 1738).

¹²⁹ In a cardinal ordering the ratios of utility differences are significant. If U and V are two different utility functions, and those functions are applied to four states of affairs A, B, C, and D, the functions exhibit cardinality if $[U(A)-U(B)]/[U(C)-U(D)]=[V(A)-V(B)]/[V(C)-V(B)]$.

¹³⁰ One can simply define a "util" in such a way that a person's preferences are forced to match the principle of expected utility. It would be more informative, however, to ask experimental subjects to evaluate states of affairs on a utility scale, and then to separately evaluate risks regarding these states. Such an approach would make welfare risk neutrality an interesting empirical hypothesis rather than a tautology.

to choose policies that favor Jill under “heads”; it promotes equality of prospects.¹³¹ But if Jill is sure to win under “tails”, the options under “heads” will no longer appear in the same light; options favoring Jill will serve only to increase the unfairly preferential treatment accorded by the state to her prospects vis-a-vis those of Jack.

For example, suppose that a society faced two equally probable perils, invasion and floods, each with a 10% chance of occurring, and each of which can be headed off only at significant personal risk. Suppose that only Jack was strong enough to do anything useful about the invasions. As of yet, however, no disasters have occurred, so there is no existing ex post inequality to rectify. The state needs to decide who should be selected to deal with a possible flood, perhaps because that person needs to be trained. Does the fact that only Jack can deal with the invasion not provide a legitimate reason to favor the policy of having Jill deal with the flood rather than Jack?

It is not as if the independence principle has moral weight of its own. The principle postulates that one should not care what would happen under “tails” as long as the choice could not affect it, but that is true only if there is no moral value tying the proper result under heads to what takes place under tails.¹³² If we care about equality of prospects there is such a moral value

¹³¹ Ralph L. Keeney, *Utility Functions for Equity and Public Risk*, 26 MANAGEMENT SCIENCE No. 4, 345 (1980)(discussing prospective risk equity). Keeney assumed the principle was consistent with independence, but this was challenged in John Broome, *Equity in Risk Bearing* 30 OPERATIONS RESEARCH No. 1, March-April 1982.

¹³² It has been questioned whether there is such a moral value at stake, at least where there are no feelings of unfairness or corruption by planners. See Robert Deschamps and Louis Gevers, *Separability, Risk-Bearing and Social Welfare Judgments*, in AGGREGATION AND REVELATION OF PREFERENCES (Jean-Jacque Laffont, ed. 1979); John C. Harsanyi, *Nonlinear Social Welfare Functions* 69-71, in FOUNDATIONAL PROBLEMS IN THE SPECIAL SCIENCES (R. Butts and J. Hintikka, eds.) 1977.

and there is good reason not to embrace the independence principle.¹³³ In this respect the social welfare function and the individual are not analogous, if one assumes that equality of prospects is not an objective of the individuals as such.¹³⁴

Indeed, we know that there is a long tradition of dealing with difficult problems by deliberately trying to create equality of prospects.¹³⁵ If Jack or Jill would be equally capable of slaying the dragon, the state could choose among three policies when the dragon makes its appearance, “Jack must fight the dragon”, “Jill must fight the dragon”, or “The loser of the coin toss must fight the dragon.” The third approach seems more fair because it respects equality of prospects.

In this case, however, Adler and Sanchirico have an interesting argument that the value of equal prospects is illusory. They suggest that the equal prospects argument would support flipping a coin a second time, after the result of the first coin toss was revealed.¹³⁶ Each flip of the coin recreates a new equality of prospects, and the planner would keep flipping the coin as

¹³³ An early statement of the concern for equality of prospects and its relation to the independence assumption is Peter Diamond, *Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparisons of Utility: Comment*, 75 J. POL. ECON. No. 5 765-66 (October 1967). This value has been called “risk equity”. Ralph L. Keeney, *Equity and Public Risk*, 28 OPERATIONS RESEARCH No. 3, Part I, May-June 1980;

¹³⁴ Adler and Sanchirico argue that Diamond’s objection goes to process rather than substance, but this seems incorrect. Equal prospects is an outcome, and can be the result of a procedurally attractive process in which all individuals willingly participate, a tyrant’s whimsical rolling of a roulette wheel for her own amusement, or a natural lottery where no state is even present. Adler and Sanchirico, *supra* note 30, at 340-41.

¹³⁵ The deliberate use of lotteries as a mechanism for achieving fairness is the topic of John Broome, *Uncertainty and Fairness*, 94 ECON. J. 624 (1984).

¹³⁶ Adler and Sanchirico, *supra* note 30, at 345.

long as the recreated equality value outweighed the incremental loss from delay in dealing with the dragon or wasted energy in coin tosses.

This is a wonderful hypothetical, but in the end I think it does not support the independence principle or cast doubt on the value of equal prospects.¹³⁷ Rather, it is another illustration of the dynamic consistency problem. What we have is a choice among multi-stage policies. One policy would be “Toss a coin, and then immediately implement the result no matter what it is.” Another policy would be “Toss a coin, and if Jack (Jill) loses, toss it again, but if Jack (Jill) wins, implement the result.” A third policy would be “Toss a coin, and then regardless of the result, toss it again.” Viewed from the ex ante point of view, the first policy is obviously the one that advances a social welfare function consisting of Jack’s prospects plus Jill’s prospects minus one-half the difference between their prospects. Their prospects are equal, and are as good as they can be made because the dragon will be slain as quickly as possible. The second option is worse both because one party’s prospects are inferior to the other and because of the costs of delay. The third option is worse because the multiple coin tossings cause delay costs without making the initial prospects any more equal than a single coin toss. So if there is a way to overcome the dynamic inconsistency problem, there does not seem to be any reason to doubt the policy of creating equal prospects and then immediately implementing the policy despite the ex post inequality.

Admittedly, the most natural way to deal with the problem of dynamic inconsistency

¹³⁷ It is also possible that the nature of the equality value makes it dependent upon history. This could be true either for equality of results or for equality of prospects. Equality of result may require that people disfavored in the past be preferred in the future. And equality of prospect may require that people whose prospects in the past were unfavorable be given favorable prospects for the future.

would be to think in terms of historical entitlements.¹³⁸ If promises are deontologically binding, then the planner should simply make a promise at Time One and then carry it out (as morally required) at Time Two.¹³⁹ If property rights exist that cannot be morally confiscated, then the winning lottery ticket should be regarded as a species of property.¹⁴⁰ If consent can morally bind then the advanced consent of Jack and Jill to follow through on the first coin toss should be procured. If the right thing to do is to follow rules that promote good consequences rather than promote them by each act, then the best rule for the planner to follow is “carry out the second stage of two-stage coin toss policies without regard to the prospective consequences of doing so.”¹⁴¹ If a moral agent should follow two-level consequentialist approaches such as those of Professor Hare¹⁴², then the social planner should operate at the intuitive level of “One coin toss is enough” and understand at a critical level that equal prospects are being promoted indirectly by consistent use of the norm.¹⁴³ The pure consequentialist may reject all of these approaches, but

¹³⁸ For an axiomatization of decision making that is not consequentialist but takes into account the past result see Larry G. Epstein and Uzi Segal, *Social Welfare Functions*, J. POL. ECON. 691, 703-04 (1992).

¹³⁹ See CHARLES FRIED, *CONTRACT AS PROMISE: A THEORY OF CONTRACTUAL OBLIGATION* (1981) (arguing that binding nature of contracts flows from moral obligation to keep promises).

¹⁴⁰ See Loren E. Lomasky, *PERSONS, RIGHTS, AND THE MORAL COMMUNITY* (1990) (property rights facilitate pursuit of ongoing projects).

¹⁴¹ See generally Larry Alexander, *Pursuing the Good – Indirectly*, 95 ETHICS 315 (1985)(discussing structure and problems with arguments for indirect pursuit of good consequences).

¹⁴² See R.M. HARE, *MORAL THINKING: ITS LEVELS, METHODS, AND POINT* 44-64 (1981)

¹⁴³ The two-level approach is sometimes considered a kind of elitism in which ordinary people act on intuitive morality and the critical elite alone see the consequentialist justification. But this is not a necessary feature of the approach. All of us act on common sense morality but

as we have seen the irony is that the consequentialist can thereby become her own worst enemy.

But let us stay with pure consequentialism for the sake of argument. At every stage our planner follows the social welfare norm of “maximize from this point forward Jack’s expected welfare plus Jill’s expected welfare minus one-half the difference in their expected welfares.” Should she toss the coin a second time? That approach would be an attractive way of promoting equal prospects from that point forward at low cost *if* the planner at the next stage would mechanically implement the results of the second coin toss. However, if subsequent planners face the same problem and reason the same way, the dragon may never be slain. Foreseeing that result, the planner at the very first stage would simply have to reject the policy of using a coin toss and would have to pursue a second best option such as picking the person who could do the job at infinitesimally less cost than the other. For a planner with egalitarian sympathies that purely utilitarian option is not a very attractive solution to the problem.

The infinite regress might be avoided, but not necessarily in a manner that made things any better, if the planner’s problem keeps changing. We might suppose that the danger that the dragon will destroy the town increases with every minute of delay. At some point, the planner at (say) stage 10 will decide that the incremental egalitarian advantage of another coin toss is just less than the incremental delay cost and will implement the result of the last coin toss.¹⁴⁴ If so, then the planner at stages 1 through 9 could at least consider the lottery option because it will eventually be implemented. But the implementation eats away all of the moral surplus from the

have the potential to engage in critical reflection on what we are doing day to day.

¹⁴⁴ See Adler and Sanchirico, *supra* note 30, at 344 (planner will flip coin until incremental egalitarian benefit of another flip is outweighed by utilitarian costs).

coin toss approach. The ex ante planner at Time One faces the bleak options of a coin toss system with absurd levels of delay or the inequalitarian approach of choosing one person for certain danger.

As before, however, what makes the consequentialist system possible is the fact that the social system is not in its last period.¹⁴⁵ The one-shot solution threatens to drain all the value from the system of lotteries.¹⁴⁶ The ex ante planner creates a lottery system with an express announcement that the system is a multi-stage policy in which each lottery is to be implemented immediately. Now the second stage planner has to decide what to do. She has three main options. Option A is to affirm prospectively the policy that all future coin tossings are to be implemented immediately but to treat the already initiated lottery as an exception. As to the existing lottery, this option would involve either retossing the coin or choosing a named victim, whichever seemed better. Option B is to reject both for the current lottery and prospectively the policy that coin tossings are to be implemented immediately. Again, for the already initiated lottery this would involve either retossing the coin or choosing a named victim, whichever seemed better. Option C is to affirm the policy that all coin tosses are to be implemented immediately and then to impose the costs resulting from the stage one coin toss.

We recall that the maximand for the planner at Time Two is Jack's expected welfare plus Jill's expected welfare minus one-half the difference in their expected welfares, with expectations measured as of Time Two. Which of the three options will the Time Two planner

¹⁴⁵ See notes 85-103, *supra*, and accompanying text.

¹⁴⁶ For game theory purposes, the essential distinction is between games with a finite number of repetitions and those with an infinite number. See WALTER NICHOLSON, MICROECONOMIC THEORY 451-54 (2005).

regard as achieving that maximum? Option A is very tempting. The planner at Time Two is looking both at an existing problem where the incidence of costs has been decided and at an endless string of future costs where the incidence has not been decided. Immediate lotteries achieve equality at low cost for the future problems, so she wants to implement them. But prospective equality is not promoted by carrying out the results of the first lottery, so she is tempted to explore the alternatives.

However, Option A is not best. The point demonstrated earlier can be rephrased as a proof by contradiction. Suppose that Option A were best for the planner at this stage. The planner at subsequent stages is going to face the same essential decision problem.¹⁴⁷ She will have one already initiated lottery as to which she wants to reject the policy of immediate implementation, and an endless succession of future lotteries as to which she wants to affirm immediate implementation. So if Option A is best for our Time Two planner, it will also be best for the planner at other stages. However, if the planner at subsequent stages is not willing to carry out the results of already initiated lotteries, then the advantages of articulating the policy at Time Two have disappeared. We reach a contradiction. If Option A were best at Time Two, it would be best for later stages, but if it were best for later stages, it would not after all be best at Time Two. So Option A cannot be best at Time Two.

Option B is very unattractive. It involves giving up on the lottery concept and thus forgoing equality of prospects with regard to the long succession of future problems. Option C,

¹⁴⁷ This is the crucial assumption. The decision problem at the next stage is essentially the same because each decision maker looks at a finite past and an infinite future. If the future decision maker were in the last period she would be tempted to refuse to carry out the coin toss, and the anticipation of that result would make the coin toss policy unattractive to the initial planner.

implementing the past lottery immediately and affirming the policy of implementing lotteries immediately, is indeed possible. There is no contradiction here. Suppose that it were best to adopt Option C at Time Two. Because the structure of the decision problem in an ongoing society is so similar, one would then expect Option C to be the best option for the planner at later stages as well. So the planner could expect that future planners would faithfully implement all lotteries immediately. That would reaffirm her own rationality in committing to the idea of these future lotteries. All that is necessary is that Option C does indeed dominate over Option B. It will as long as the egalitarian benefits of fixing the results of the already initiated lottery do not outweigh the social gains from being able to adopt future lotteries that are implemented immediately. In an ongoing society with lots of problems to solve and without a steep discount on the social value of future welfare, that should be satisfied in most cases.¹⁴⁸

¹⁴⁸Here I can't resist telling an anecdote about my two children when they were young. They each wanted to engage in a different activity and would quarrel about it. Both activities were joint projects, so we could only do one or the other, and I proposed tossing a coin. I was happy to see that they liked the idea, but when the coin was tossed, to my surprise the loser was still unsatisfied and the quarreling resumed. We would joke about "two out of three" but never actually did it. Over time, the kids got better about tolerating the results of the coin tosses, though they were never completely reconciled to them.

What was happening in this family story? I proposed the coin toss, partly to put an end to the annoying quarreling but also because I wanted to treat the kids equally and to be perceived as treating them equally. The loser was unsatisfied with the result because we were now in a new status quo where the prospects of the loser seemed to be so unequivocally bleak. The two-out-of-three idea was a joke because everybody understood that the same rationale would then support an absurd string of three-out-of-five and four-out-of-seven coin tosses. The kids got better about it because they acquired more of a long term perspective, either because they matured a little or because they started to see from experience that the coin toss process often worked in their favor. And some of the ex post grumbling was actually justified because the chosen activity was one that the loser really detested, in which case the coin toss may not have been my best idea in the first place.

IV. Examples and the value of equality

Adler and Sanchirico's explicit arguments against the ex ante approach are the technical ones of dynamic consistency and the sure thing principle addressed above. But I believe that their principal complaint is not technical at all but directly substantive and moral -- that equality, properly conceived, just is an ex post value. This concern comes across in the examples they offer of how the ex ante and the ex post approach would differ.

They offer the example of a flood or terrorist incident that could happen to anyone.¹⁴⁹ From the ex ante point of view, there is no equality problem as long as the chances of being a victim are the same. But morally there is an equality problem. In the real world a state of affairs is revealed, and the most fundamental and real truth is that one of the parties is suffering while the other is not.¹⁵⁰ People do not dwell in hypothetical states that might have occurred, but in the lived reality of actual states, and the existential truth of the parties' condition is that it is grossly unequal.

This substantive argument in turn forces us to look more carefully at the equality value itself. We have been assuming thus far that the value of equality can be captured in an equation of the general form that social welfare is Jack's welfare plus Jill's welfare minus one-half the

¹⁴⁹ Adler and Sanchirico, *supra* note 30, at 351-53.

¹⁵⁰ It has been argued that unfairness can be conceptualized as a type of harm that is suffered by the individual undergoing that unfairness, whether or not it is felt as such. *See* Weighing Goods, *supra* note 34, at 114.

difference in their welfares. As Adler and Sanchirico recognize, however, this is not the only way to describe mathematically the role of equality in a social welfare function.¹⁵¹ A different notion would be that social welfare involves adding the results of some concave function of individuals' individual welfare. On a graph a concave but increasing function becomes flatter and flatter, as if it were harder to increase its value. An example of a concave function is the square root, so one social welfare function might be the square root of Jack's welfare plus the square root of Jill's welfare.¹⁵² If Jack's welfare is 25 units and Jill's is 100, social welfare would be $5+10=15$. Jill's welfare is four times Jack's, but in social terms Jill's welfare only adds twice as much to social value as Jack's. It gets harder and harder to make a really big individual contribution to social welfare by becoming individually better off.¹⁵³ This is often called a prioritarian approach because it captures the idea that it is a higher priority to add a unit of welfare to a person with less welfare than to a person with more.¹⁵⁴

Is the prioritarian approach better than the earlier approach of subtracting from total welfare some fraction of the difference in welfare between the parties? To answer this question I

¹⁵¹ Adler and Sanchirico, *supra* note 30, at 300 (separable and nonseparable ways of conceptualizing the equality value).

¹⁵² Of course the precise numerical form of the square root is secondary to the essential idea that the function be concave so that increments in an individual's utility produce diminishing social good.

¹⁵³ There is a practical question of the size of this effect. If utilities are already somewhat bunched by the fact that additional income generations diminishing marginal utility, the resulting gap in utilities may not be enough to make the prioritarian approach differ too much from utilitarianism. This issue is addressed in Louis Kaplow, *Concavity of Utility, Concavity of Welfare, and Redistribution of Income*, NBER Working Paper No. 10005 (2003).

¹⁵⁴ See THOMAS NAGEL, *MORTAL QUESTIONS* 110 (1979 (egalitarian principle of "priority to the worst off").

believe it is important to emphasize that we are trying to determine the importance for social welfare of *equality itself*, i.e., the mere fact of inequality abstracted from any effects that inequality might have on individual welfare.¹⁵⁵ Real world inequalities have indirect effects on welfare.¹⁵⁶ They create feelings of superiority and inferiority, class sentiments of envy and pride, differences of political power and influence, relations of dominance and submission, feelings of guilt and responsibility and anger.¹⁵⁷ These effects are morally of great importance but they should already be incorporated in the numbers assigned to the welfare of the individuals.¹⁵⁸ In thinking about equality we somehow need to ask about the importance of the value itself abstracted from these consequences.

To accomplish this abstraction a hypothetical world may actually be better than real world examples. For those with a science fiction bent, imagine a Twin Earth in another galaxy with

¹⁵⁵ It has been questioned whether the prioritarian approach is truly egalitarian, since it does not make essential reference to the relative position of persons. See LARRY S. TEMKIN, *INEQUALITY* 245-46 (1993); DANIEL SHAPIRO, *IS THE WELFARE STATE JUSTIFIED?* 22 (2007) (“Views that focus on aiding or benefiting the worst off are not, strictly speaking, egalitarian.”)

¹⁵⁶ Some commentators who consider themselves “egalitarian” stress that their core objection is not to inequality of welfare but to hierarchical social relations. See David Miller, *Equality and Justice*, in *IDEALS OF EQUALITY* 24 (Andrew Mason, ed., 1998).

¹⁵⁷ It has been argued, however, that these concerns of social inequality do not mean that equality is purely an instrumental value. See Richard Norman, *The Social Basis of Equality*, in *IDEALS OF EQUALITY*, id. at 37. (arguing that inequality is constitutive of certain social relations). It is hard to test for the intuitive power of such a norm, however. One would have to imagine an unequal social state minus all of the welfare costs created by the inequality and then ask whether the resulting value is powerful enough to trump maximizing the average prospects of individuals.

¹⁵⁸ The numbers incorporate welfare effects not only in conscious feelings but in other aspects of welfare that are subconscious such as the need to repress feelings of hostility toward those who regard themselves as one’s social betters.

people wired the same way as people are on Earth. Or if that seems too odd imagine ancient Chinese emperors trying to decide what to do for their subjects while something else was happening to people in South America. The question we want to ask is whether the social welfare function that subtracts the difference in welfare makes sense when one is talking about pure differences in welfare of this sort.

Suppose planners on Earth do something to raise the welfare of their citizens from 100 units each to 200 units each. On Twin Earth, however, people are still living at a level of 100. The question to ask is whether it makes sense to add a *negative* item to the moral score of the planner here on Earth to reflect the increase in inequality between residents of Earth and Twin Earth. Is there a sense, albeit one that is outweighed, in which we regret the improvement on Earth and wish to condemn Earth planners for bringing it about? Or suppose that the planner on Earth did something terrible – you can pick here your favorite historical crime – and cut the welfare of citizens on Earth from 200 to 100. Would we want to add a *positive* item to the moral score of the planner here to reflect the decrease in inequality between residents of Earth and Twin Earth? Is there a sense, albeit one that is outweighed, in which we feel like thanking the planners on Earth for their decision to make Earth's citizens worse off?¹⁵⁹

Consider the effects of such a social welfare function on the evaluation of risk taking. Suppose that ancient Chinese planners have a choice to plant rice or wheat, and imagine that wheat does better in years where the world experiences El Nino conditions and that rice does

¹⁵⁹ These points are posed as questions because moral intuitions are ultimately personal and disputable. I myself find it very strange to say that some terrible wrong is mitigated by the fact that it reduces an unexperienced inequality with beings far away who were also being wronged.

better in the other years. Finally, imagine that the corn crop in South America, which is the only crop available to be planted there, does better in El Nino years. For concreteness, assume that if wheat is planted each Chinese citizen would have welfare of 90 units in El Nino years and 40 units otherwise. If rice is planted each Chinese citizen would have welfare of 50 units in El Nino years and 100 otherwise. El Nino conditions happen exactly half the time. In South America each citizen has welfare of 90 units in El Nino years and 40 units otherwise. Assume finally that the population of China is the same as that of South America.

On this hypothetical, the Chinese emperor improves global social welfare by planting wheat rather than rice. With wheat, social welfare for a given pair of Chinese and South American persons is $\frac{1}{2} [90+90-1/2 (90-90)] + \frac{1}{2} [40+40-1/2(40-40)] = 130$ units. With rice, social welfare per pair is $\frac{1}{2} [50+90-1/2(90-50)] + \frac{1}{2} [100+40-1/2(100-40)] = 115$ units. In other words, the Chinese planner should choose a crop that produces worse results both in good years and in bad years, in order to cause the risks to be in synch with those of people in South America. That seems quite crazy in circumstances where there are no feedback effects on welfare from the resulting inequalities, i.e., where one is trying to assess the moral weight of the inequality itself.

How does the prioritarian approach fare with this type of hypothetical? I believe that it performs quite well. Suppose that Earth's citizens have recently been lifted from 100 to 200 units of welfare and that Twin Earth's citizens have recently been lifted from 0 to 100 units of welfare.¹⁶⁰ Does it make sense to say that what happened on Twin Earth was a greater moral improvement than what happened on Earth? I think that it does. The term "prioritarian" may

¹⁶⁰ In principle the prioritarian view should apply to the relative importance of different degrees of deprivation even if the people in the two communities are unaware of each other's existence. See Derek Parfit, *supra* note 36, at 13.

contemplate a world in which some planner has power to set priorities over whether to help one person or another, which would not fit the Twin Earth hypothetical. But we can recognize the relative moral significance even if we have no power to act on the recognition.¹⁶¹ Historians of the universe in a later era can comment meaningfully about the relative importance of the improvements happening on Earth and Twin Earth at the time. The good thing about the prioritarian approach is that there is no sense in which improvements on one planet are regarded as a negative. The prioritarian approach seems much more in keeping with the spirit of social welfare functions built from foundations of individual welfare. In that sense the prioritarian approach is a cousin of utilitarianism, but unlike utilitarianism it recognizes the separateness of persons and the fact that persons whose personal utility total is low have a stronger claim on utility improvements.¹⁶²

In the China/South America hypothetical, the prioritarian approach would not countenance planting a crop in China that produced worse results both in good years and in bad years. Each Chinese subject would rationally want the planner to choose rice over wheat, and the South Americans would be rationally indifferent to the choice, so the social welfare function

¹⁶¹ The importance of prioritarian equality has been challenged on a theory that questions the metaphysical continuity of a single person over time, arguing that it is less plausible to value equality when the morally significant unit is shrunk to a person-stage. *See* Parfit, *supra* note 39, at 345. But this may draw on intuitions taken from more ordinary metaphysics. Normally we do not feel that a person is deserving of special priority because they happen to be extremely unhappy at one precise instant, because we know that that same person will be happier at other times.

¹⁶² This was Rawls's objection to utilitarianism, although his solution was a rather extreme version of prioritarianism that would maximize the position of the worst off representative person no matter how much this lowered the position of those better off. *See* Rawls, *supra* note 126, at 27, 75-83.

should dictate the choice of rice. Conditions in South America have heuristic value in providing us with the needed perspective to evaluate how meaningful the Chinese improvement really is in a larger picture. But those conditions never cause us to count improvements in China as negative features, or to count risk taking that is irrational from the perspective of the Chinese as rational because of global correlations of risk taking.

It is sometimes argued that planners should concern themselves with “resources”¹⁶³ or “primary goods”¹⁶⁴ possessed by citizens rather than with “welfare” directly. Interestingly, if one tried to construct a social welfare function out of individual elements consisting of resources, and if one is dealing with an ongoing human community, it makes sense to think of a social welfare function like Jack’s resources plus Jill’s resources minus one-half the difference between their resources. Suppose that Jack currently has 100 resource units and Jill has 50. The planner contemplates a change in which Jack will end up with 150 resource units and Jill remain at 50. It now is reasonable to say that in some respects the improvement for Jack is really a social loss, given the many feedback effects on welfare of resource inequality.¹⁶⁵ Perhaps we would want to stay with a kind of resource-based ex post Pareto norm in which the social loss is outweighed by the social gain whenever no one has her resources reduced, but even that is not certain. I believe

¹⁶³ See Ronald Dworkin, *What is Equality? Part 2: Equality of Resources*, 10 PHIL. & PUB. AFF. 283 (1981) (arguing that equality is best understood through equal resources rather than equal welfare).

¹⁶⁴ See Rawls, *supra* note 126, at 92 (primary goods are “rights and liberties, opportunities and powers, income and wealth.”)

¹⁶⁵ There is an issue about whether feelings of envy should count in the social welfare function, or should be analogized to spite, malice, or sadism and treated as a “bad” preference that should not be satisfied. This may depend on the extent to which such preferences can be changed if they are not rewarded.

that the plausibility of the social welfare function with a negative entry for inequality derives from intuitions regarding this sort of problem. But it should not be applied where all welfare effects from inequality are already incorporated in the individual assessments and where one is trying to measure the pure effect of inequality itself abstracted from all such effects.¹⁶⁶

If the prioritarian approach for incorporating equality concerns into the social welfare function is accepted, is there still a difference between the ex ante and the ex post approaches? Adler and Sanchirico argue that there is.¹⁶⁷ Suppose that a policy is contemplated under which Jack will have four units of welfare under “heads” and nine under “tails”, while Jill will have zero units of welfare under “heads” and four under “tails”. Suppose that the planner believes in equality in the prioritarian sense. To make it concrete we will say that the planner values a social state as the square root of Jack’s welfare plus the square root of Jill’s welfare. If the planner is an ex post planner she will evaluate the policy as worth $\frac{1}{2} (2+3) + \frac{1}{2} (0+2) = 3.5$ units of social welfare.

How would an ex ante planner evaluate the policy? A simple way to conceptualize mathematically the ex ante planner who believes in a prioritarian conception of equality would be to add the square root of Jack’s prospects plus the square root of Jill’s prospects. Adler and Sanchirico argue that Jack would evaluate his prospects at their expected value: $\frac{1}{2} * 4 + \frac{1}{2} * 9 = 6.5$ and that Jill would evaluate her prospects at their expected value: $\frac{1}{2} * 0 + \frac{1}{2} * 4 = 2$.¹⁶⁸ If this

¹⁶⁶ For a view that welfare rather than resources is the ultimately relevant criterion see Richard J. Arneson, *Welfare Should be the Currency of Justice*, 30 CAN. J. PHIL. 497 (2000).

¹⁶⁷ Adler and Sanchirico, *supra* note 30, at 317-18.

¹⁶⁸ Adler and Sanchirico, *supra* note 30, at 312.

argument were correct then the ex ante planner would evaluate the policy as worth the square root of 6.5 plus the square root of 2 or a total of 3.96. Hence one gets an apparent difference between the evaluation of the ex ante and the ex post planner.

A problem with this demonstration is the assumption that individuals will evaluate their own prospects based upon their expected value. Individuals are assumed to be risk neutral with respect to their own welfare and to care about only their average or expected level of welfare and not about its variance or other attributes of its distribution.¹⁶⁹ But this is not consistent with the whole spirit of the prioritarian approach. The prioritarian understands that it is more important to avoid a situation of 0 units of welfare (when 1 is possible) than it is to secure a situation of 5 units of welfare (when 4 is threatened). Why would we assume that the planner is aware of this fact but that the individuals are not aware of it?¹⁷⁰

At least with the comparativist approach (which counted inequality itself as a negative item in the social welfare function) there was a story for postulating that planners might care about this value while citizens did not. The citizens were rationally seeking to maximize their own welfares and were neglecting, in the manner of an externality, a source of social disvalue that the planner captured.¹⁷¹ The social problem was not the individual's welfare levels themselves but the indirect effect of individual maximization decisions on the pattern of resulting

¹⁶⁹ See Kenneth J. Arrow, *SOCIAL CHOICE AND INDIVIDUAL VALUES* (2d ed. 1963) (rational person is risk averse with respect to welfare).

¹⁷⁰ The link between attitudes toward risk taking and toward equality was noted in W.M. Gorman, *The Structure of Utility Functions*, 35 *REV. ECON. STUD.* 367 (1968).

¹⁷¹ The treatment of inequality as an externality is presented in Adler and Sanchirico, *supra* note 30, at 347.

welfares.¹⁷² The planner, in a sense, was looking after the group or collectivity, the “we”, and the individuals were just looking after the “I”.¹⁷³

With the prioritarian approach there is no comparable story for breaking up the welfare assessments of the individual and the planner. The planner judges that it is more important for Jack to have 1 unit of welfare rather than 0 than it is for Jack to have 5 units of welfare rather than 4. Jill’s position, and the societal interconnections between Jack and Jill, have nothing to do with it. The planner would make precisely the same judgments if there were no Jill, or if Jack’s and Jill’s welfares were necessarily connected such that no inequality between them could ever arise. The question then is why the planner, concerned with a portion of social welfare that is affected entirely by Jack’s solitary position, would evaluate that social welfare differently than Jack himself would want to evaluate it.¹⁷⁴

We could imagine reasons why Jack might take inappropriate attitudes toward his own welfare risks.¹⁷⁵ Some people are reckless and refuse to calculate risks, or block them out of their

¹⁷² The comparativist approach is thus an example of the general phenomenon that patterned conceptions of end states necessarily upset liberty. *See* Nozick, *supra* note 75.

¹⁷³ The nature of the externality is a little puzzling, however. One individual might neglect the interest of the other, but what interest would the two together neglect? One could reify the state or community as a being with its own interests, a view that has been in some disfavor at least since Bentham. *See* JEREMY BENTHAM, *AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION* 3 (1823).

¹⁷⁴ The link between moral preferences (conceptualized here as a planner’s social welfare function) and individual decisions under a veil of ignorance goes back to JOHN C. HARSANYI, *RATIONAL BEHAVIOR AND BARGAINING EQUILIBRIUM* Ch. 4 (1977).

¹⁷⁵ The question of options when the ex ante probability estimates of the individual differ from those of the state is addressed in Lewis A. Kornhauser, *On Justifying Cost-Benefit Analysis*, 29 *J. LEGAL STUD.* 1037, 1043 (2000)(comparing actor-assessed and policy maker-assessed approaches).

consciousness so that they will not be deterred in their actions by knowledge of their consequences.¹⁷⁶ But our whole approach has been based upon objective “welfare”, not subjective preferences or even happiness levels.¹⁷⁷ The numbers for each state of affairs measure how well off a person truly is.¹⁷⁸ Presumably in most plausible versions of welfarism that measure will give weight to conscious or hedonic states, but the approach is deliberately intended not to reduce completely to those states.¹⁷⁹ And if objective welfare is involved in assessing states it should also be used for assessing objectively reasonable methods of handling risks with respect to those states.¹⁸⁰ Again welfarism should take seriously any attitudes of the individual

¹⁷⁶ The problem of ex ante vs. ex post welfare optimality when risk taking decisions of individuals are not fully rational is addressed in Peter J. Hammond, *Ex-Ante vs. Ex-Post Welfare Optimality under Uncertainty*, 48 *ECONOMICA* 235 (1981).

¹⁷⁷ The precise nature of “welfare” is a large subject. Broadly speaking, there are three popular accounts, that welfare consists of attractive mental states (pleasure or happiness), that it consists of partaking various lists of objective goods, or that it consists of preference satisfaction, even in cases where the person is unaware of whether her preference has been satisfied. Leading objective list accounts are JOHN FINNIS, *NATURAL LAW AND NATURAL RIGHTS* 59-99 (1980); MARTHA NUSSBAUM, *WOMEN AND HUMAN DEVELOPMENT* 34-110 (2000). Ronald Dworkin has argued that at some level preferences must be involved, since “my life cannot be better for me in virtue of some feature or component I think has no value”. Ronald Dworkin, *Foundations of Liberal Equality*, *TANNER LECTURES ON HUMAN VALUES* 75-77, Vol. 11 (1990).

¹⁷⁸ For a discussion of the various theories for the meaning of well-being or welfare, see JAMES GRIFFIN, *WELL-BEING* (1986).

¹⁷⁹ Some aspects of welfare are probably not reflected in conscious states. A person who believes his spouse is faithful is probably better off in fact when the spouse actually is faithful.

¹⁸⁰ Some philosophers take the view that the right action is quite simply the one that will produce the best consequences. See G.E. MOORE, *PRINCIPIA ETHICA* 149 (1903). If this is correct, then one needs a different sense of “right” to encompass the action that one would recommend be taken in the face of ineradicable risk, such as a “subjective” and “objective” notion of rightness. See Frank Jackson, *A Probabilistic Approach to Moral Responsibility*, in *LOGIC, METHODOLOGY, AND PHILOSOPHY OF SCIENCE II* (Ruth Marcus, Georg Darn and Paul Weingartner, eds. 1986).

toward those risks and should not be an impersonal algorithm for how risks must necessarily be handled by all persons. But it should not defer to every possible view of risk taking¹⁸¹, including those that involve irrational neglect of one's actual welfare in particular states.¹⁸² And once we stipulate that the individual has taken the objectively proper view regarding his own welfare risks, there is no evident reason why the planner would want to reject that calculation and impose steeper levels of risk aversion for social welfare purposes.

A brief note should be made here regarding epistemic and motivational issues. With objective welfare as the maximand, there is an open empirical question regarding who has better epistemic access to that information and a greater incentive for bringing their knowledge to bear on their decisions. People who evaluate that question differently will obviously have very different attitudes on the practical question of empowering governmental agents to supercede judgments of citizens regarding risks and other subjects of valuation.¹⁸³ For our purposes, we are working with a simpler model that is devoid of these institutional competence concerns. In our model, citizens care about their own welfare and know how to promote it, and the planner cares

¹⁸¹ Nevertheless, it is important to maintain a conception of right behavior and of good consequences that is probability-relative, where one is focused on objective probability estimates that are common to all and represent the best information available. *See* Weighing Goods, *supra* note 34, at 137-130 (defending probability-relative normative criteria)

¹⁸² *See* Brad Hooker, *Rule Consequentialism*, STANFORD ENCYCLOPEDIA OF PHILOSOPHY 15 (revised ed. 2008) (available at <http://plato.stanford.edu/entries/consequentialism-rule>) (“Note that expected good is not to be calculated by employing whatever crazy estimates of probabilities people might assign to possible outcomes. Rather, expected good is calculated by multiplying the value or disvalue of possible outcomes by rational or justified probability estimates.”)

¹⁸³ This issue of epistemic paternalism is a lively debate in the medical ethics literature. *See, e.g.,* K. Grill & S.O. Hansson, *Epistemic Paternalism in Public Health*, 51 J. MED. ETHICS 648 (2005).

about the social welfare function and knows how to promote it, in both cases subject to the commonly understood obstacle that states are known only with objectively ascertained probabilities.¹⁸⁴

To summarize, we have defended the prioritarian view of equality once all indirect effects of differences in condition between parties are properly incorporated into individual welfare assessments. From a prioritarian point of view there is reason for people to be risk averse with respect to welfare risk. But that reason applies both to the individuals and to the social planner.¹⁸⁵ There is no reason for the social planner to superimpose levels of risk aversion that would be greater than those that would be most rational for the individuals themselves to embrace. Thus the social planner has no reason to reject policies that would be ex ante efficient.

Inequalities are often subjectively resented by the parties themselves, but sometimes the most interesting features of inequalities come if the parties choose to accept or internalize those inequalities. The issue is whether this internalization itself represents a useful adaptation to reality or a kind of indirect damage to the individual and her sense of self-worth.¹⁸⁶ Here again the ex ante approach to equality seems attractive. Suppose that the policy were merely to pick

¹⁸⁴ This modeling decision is not intended to minimize the importance of the epistemic factors, which are indeed likely to be crucial determinants of wise policy. But it is important to know what ideal one is trying to approximate before looking at practical obstacles to obtaining that ideal.

¹⁸⁵ The moral importance of the “veil of ignorance” construct linking individual and social preferences was challenged in BRIAN BARRY, *THEORIES OF JUSTICE* 334-35 (1989).

¹⁸⁶ This relates to the view that the oppressed sometimes come to internalize the ideology of the dominant group and thus contribute to their own subordination. See Thomas R. Bates, *Gramsci and the Theory of Hegemony*, 36 *J. HIST. IDEAS* 351 (1995) (discussing this theory of hegemony).

Jill to fight the dragon in all states of affairs, not because Jill was better or worse at the task but simply because someone had to do it and Jill was available.¹⁸⁷ Suppose further that Jill did not resent the unequal treatment, reasoning that somebody has to suffer and that she is prepared to subordinate her own interests to the greater good.¹⁸⁸ Would we not believe that Jill was selling her own life prospects short, simply capitulating passively to her arbitrary selection? Suppose on the other hand that the policy was to toss a coin, that Jill lost, and that she fully accepted the loss, reasoning that someone had to slay the dragon and that the government's policy gave each person an equal chance to escape the burden. It would be understandable if she could not bring herself to embrace this view ex post¹⁸⁹, but if she did, would we really want to shake her out of such an attitude? Would we not instead regard this as an admirable sentiment on her part, embracing patriotically her obligation to do her fair share for the community?¹⁹⁰

¹⁸⁷ A slightly different hypothetical would be one in which Jill was picked for utilitarian reasons, say that she was slightly more talented at the task than Jack. Here there would remain an objection to the nonuse of the lottery based on equality of prospect concerns, but that objection would have to compete normatively with the improvement in prospects that resulted from choosing the better qualified dragon slayer.

¹⁸⁸ The hypothetical is chosen with Jill as the victim to suggest the feminist worry about altruism by women turning into a mechanism of their oppression. *See, e.g.* Margaret F. Brinig, *Does Mediation Systematically Disadvantage Women*, 2 WM. & MARY J. WOMEN & L. 11, 28 (1995) (stating that “women might seem to be altruistic when they actually are being victimized.”).

¹⁸⁹ The psychological stress of ex post inequality is likely to make it hard to reconstruct the fairness of the original coin toss, but in principle these are welfare costs that are properly considered in the original ex ante assessment.

¹⁹⁰ The conclusion that she is only being asked to do her “fair share” assumes that the task could not have been made easier or safer by enlisting multiple participants. If it could, concentrating the burden on one person could be objected to both ex ante and ex post on egalitarian grounds.

Ronald Dworkin has stressed that the fundamental egalitarian concept is that the government should treat individuals with equality of concern and respect.¹⁹¹ If the government deliberately engineers prospects such that Jack does better than Jill no matter what happens, it is hard to see how the government is respecting the equality of the parties. If their prospects are equal, however, the two persons can correctly see the government as free of any desire to advance the interests of one of them vis-a-vis the other. If inequalities result ex post, both parties can understand that they do not arise from government's decision to purposely favor Jack over Jill. They arise instead from risks that the parties themselves from an initial position of equal prospects had rational reason to want the government to take.

Does this attitude survive the concrete examples noted earlier? Again, suppose that the parties ex ante have an equal chance of experiencing a flood or terrorist incident, but that ex post the incident will adversely affect only one of them. Should the government neglect the ex post inequality and simply feel content to observe that the parties began from a position of equality? The answer is no.¹⁹² If Jack and Jill are part of an ongoing community then their ex post inequality will have numerous feedback effects into their welfare. Those effects should be considered by the planner, but then they should also be considered ex ante by Jack and Jill. In addition, the planner should consider that increments in welfare are more important when a

¹⁹¹ Ronald Dworkin, *TAKING RIGHTS SERIOUSLY* 272 (1977).

¹⁹² It is possible that the ex post effects of inequality could be in either direction. We might take the attitude that it is better for everyone to suffer equally and share the misery, or we might view the fact that some have been spared from general suffering as mitigating a social catastrophe that would come if everyone were hurt. These alternative assumptions are addressed in Peter C. Fishburn & Philip P. Straffin, *Equity Considerations in Public Risks Evaluation*, 37 *OPERATIONS RESEARCH* 229, 232 (1989); Peter C. Fishburn, *Equity Axioms for Public Risks*, 32 *OPERATIONS RESEARCH* 901, 903 (1984).

person is welfare deprived, but then that prioritarian judgment should also be considered ex ante by Jack and Jill. If Jack and Jill have rationally assessed all of these variables ex ante, and from a position of initial equality would both have had rational reason to support the policy despite the ex post inequalities, then the planner has no good reason to contravene their judgments. It just is not reasonable to insure against everything.

Consider another example to test one's intuitions about the ex ante vs. the ex post approach. The government is considering adopting a program of veterans' benefits for draftees. It is argued that people who were forced to risk their lives for their country deserve to be treated well. This makes good sense from an ex ante egalitarian point of view, because the prospects for a soldier include some particularly nasty downsides, and moreover downsides under circumstances where ex post compensation is not likely to do much good. From an ex post perspective, the egalitarian argument for veterans' benefits is less compelling. Given that the soldier was not killed or severely injured, he or she may be reasonably prosperous and not need any financial assistance. This is not to say that the ex post position could not support veterans' benefits on other theories, perhaps improving soldier morale or increasing the willingness to serve. But the argument that a government which takes a person and imposes great downside risk on him owes that person favorable upside prospects would not be available.

We should not lose sight of the great cost for our understanding of the relationship of the government and the citizen of rejecting the ex ante efficiency approach. The proposition is that the planner has good reason to reject the unanimous rational views of the citizenry regarding the

risks that should be undertaken.¹⁹³ Here is a paternalism that cannot be softened by simply better informing people about their interests. It is a permanent role for the state *over* the citizenry, indeed a moral argument that people should relinquish their hard-won status as citizens who control their government and be returned to the earlier status of subjects ruled by their government.¹⁹⁴ Even acknowledging that the ex post case for planner despotism is merely a prima facie one and could be rebutted by many practical objections, going even that far down a dark political road is not a concession that should be made cheerfully.

The ex ante approach provides necessary support for the standard normative economic approach of cost-benefit analysis. Suppose that the government is considering raising the speed limit on freeways from 45 to 55 miles per hour, and that Jack and Jill, after rational assessment of their expected gains and losses, decide that they would each be willing to pay \$100 to have the change be made. It cannot be claimed that the policy is ex post Pareto efficient, since the increase in the speed limit is likely to cause additional highway fatalities¹⁹⁵, so ex ante efficiency

¹⁹³ It has often been treated as axiomatic in the economics literature that society would be indifferent between two probability distributions over social states whenever all individuals are. See Peter J. Hammond, *Harsanyi's Utilitarian Theorem: A Simpler Proof and Some Ethical Considerations*, EUI WORKING PAPERS IN ECONOMICS 91/32 (1991).

¹⁹⁴ Consider the description of the interaction between planner and citizens presented by Adler and Sanchirico, *supra* note 30, at 348 (“It might be objected that ex post Pareto inferior options will be ‘unstable’. If the social planner chooses the ex ante Pareto inferior option, the affected individuals will overturn it, or at least will make efforts to do so, with social costs. But no actual choice can ever be ‘overturned’, at most, the affected individuals can force the planner to make a later choice that is similar in some respects to the earlier, Pareto superior, one. Moreover, many Pareto inferior choices will not be ‘overturned’ even in this weaker sense, given collective action problems among the individuals.”)

¹⁹⁵ See RICHARD A. RETTING & MICHAEL A. GREENE, INSURANCE INSTITUTE FOR HIGH SAFETY, TRAFFIC SPEEDS FOLLOWING REPEAL OF THE NATIONAL MAXIMUM SPEED LIMIT 8 (1997) (the 1987 permission to increase speed limits to 65 miles per hour appears to have

provides important support for the change. Now suppose that Jack rationally would be willing to pay \$75 to further increase the speed limit from 55 to 65 but that Jill rationally would pay \$50 to avoid such an increase. The Kaldor-Hicks norm alone is not powerful enough to justify making the change, and again ex post Pareto efficiency is no help at all when the policy is likely to result in additional fatalities.¹⁹⁶ The cost-benefit analysis has been useful, but primarily because of the assistance it receives from the ex ante approach. Ex ante efficiency, together with the cost-benefit analysis, provides a warrant for the policy change *provided* that it is packaged with other policies that would improve Jill's prospects by more than \$50 while harming Jack's prospects by less than \$75.¹⁹⁷

Consider the treatment that normative economists have accorded to the issue of the proper measure of damages for a negligent wrongful death.¹⁹⁸ Courts tend to award damages based upon harm to dependent survivors¹⁹⁹, but this approach ignores completely the cost to the victim herself of losing her own valued life.²⁰⁰ However, if we tried to compensate ex post the

increased fatalities some 20% on affected roads).

¹⁹⁶ See notes 8-25, *supra*, and accompanying text.

¹⁹⁷ The supplementing policy could be a straightforward redistributive transfer of wealth from Jack to Jill, even if the redistribution involved some administrative deadweight costs, or it could be other substantive policies with effects that complemented the incidence of costs and benefits from the change in speed limits.

¹⁹⁸ The discussion here is limited to liability based in negligence. If the defendant is strictly liable, the defendant will remain liable after all cost-justified precautions are taken, and the consumers will be forced to purchase an insurance policy they may not have wanted to buy.

¹⁹⁹ See DAN B. DOBBS, HANDBOOK ON THE LAW OF REMEDIES 556-57 (1973) (noting this survivor-oriented measure of damages for wrongful death).

²⁰⁰ See Kurtis J. Kearl, *Turpin v. Dartini: Recognizing the Unsupportable Cause of Action for Wrongful Life*, 71 CAL. L. REV. 1278 (1983) (In wrongful death actions, "no account is

victim of a wrongful death with an amount that would make her indifferent to the tort's having occurred²⁰¹, the result might be an astronomical or even infinite sum. Instead, economists have been inclined to analyze behavior under various types of risk, deducing a "value of life" from how much people demand in compensation to take small risks of fatalities.²⁰² Intuitively this is a more attractive approach than the extremes of ignoring the harm to the deceased altogether or making it infinite, but what precisely is the warrant for this intermediate approach? Suppose that potential defendants produce valued products that on rare occasion result in fatalities that the consumers had no way to know about in advance.²⁰³ Suppose further that these fatalities could be prevented by taking a precaution that costs the defendant less than the expected damages measured by a correct application of the "value of life" formula.²⁰⁴ Liability will increase the

taken of the relative value to the deceased of the pleasures and benefits of life and nonexistence.")

²⁰¹ This is often stated to be the purpose of compensatory damages. For example, the Restatement (Second) of Torts, Sec. 903 cmt. a (1979) states that "compensatory damages are designed to place /the victim/ in a position substantially equivalent in a pecuniary way to that which he would have occupied had no tort been committed."

²⁰² Need. See, e.g., W. Kip Viscusi, *The Value of Risks to Life and Health*, 31 J. ECON. LIT. 1912, 1930 (1993) (defending this methodology and arguing for \$5 million estimate for value of life lost in risky accident)

²⁰³ The assumption of consumer's lack of knowledge is important. If consumers know the product without the safety precaution is unsafe, they will pay more for a product that contains the safety precaution even without any liability on the part of defendants. See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* (6th ed. 2003) (discussing the importance of the assumption made with regard to consumer information).

²⁰⁴ One should not downplay the difficulties of doing the "value of life" calculation correctly. Suppose it could be demonstrated that people demand \$500 in extra wages to work in the mines when there is a 1 in 100,000 chance of dying there. This might indicate simply that mine workers are misinformed about the risks they take as well, or that a few highly risk preferring individuals could be found to fill these positions. The point of the text is merely that these are the right questions to be asking, as opposed to ignoring the value of life or treating it as

price of the product by the amount of the seller's costs²⁰⁵, but consumers will receive a safer, more highly valued product. In ex ante terms each consumer would benefit from the change²⁰⁶, though consumers who were destined not to be injured in any event would end up worse off ex post because of the higher price they paid.

V. Conclusion

Our principal goal has been to defend ex ante efficiency as a normative standard for law-and-economics. The ex post Pareto norm, which requires that everyone come out ahead (or at least not lose ground) in all possible states of affairs, is too demanding as a criterion for policy. Efficiency has more scope to be a helpful policy norm if we can defend policies with risks that

infinite.

²⁰⁵ See Posner, *id.* at 7 (“The forces of competition tend to make opportunity cost the maximum as well as minimum price.”)

²⁰⁶ Is the change therefore ex ante efficient? The seller's interests need to be considered as well. In long-run equilibrium profits would be zero in any event, so the seller is not harmed. However, in the short-run the seller will experience reduced sales and profits, so these expected losses would need to be compensated by gains from other moves to make the transaction ex ante efficient for everyone affected.

rational individuals would have reason to take even though everyone knew that some people would lose ex post.²⁰⁷

Adler and Sanchirico have offered a three-pronged objection to the ex ante approach. The objections are all based upon the assumption, which this article has shared, that social welfare functions should make room for egalitarian factors, and they acknowledge that ex ante efficiency would be no problem if the value of equality itself were best conceived from an ex ante perspective. But they offer three reasons to believe that the egalitarian planner must view the value of equality as an ex post variable. They argue that an ex ante egalitarian approach would lead a planner into dynamic inconsistency, that it would cause the planner to violate the sure thing principle, and that it would contravene intuitions about the ex post nature of the equality value. This article has offered responses to each of those three objections.

Dynamic inconsistency is not a problem uniquely faced by making equality an ex ante value. It haunts all systems of consequentialism that are unconstrained by conceptions of historical entitlement. While a complete solution probably will require some limitations upon unlimited consequentialism, a great measure of dynamic consistency can be preserved by the fact

²⁰⁷ An important area for future research is to examine the issue of ex ante efficiency when we move beyond the area of calculable risks into that of uncertainty or subjective risk. That distinction is discussed in Baruch Fischhoff, Stephen R. Watson, & Chris Hope, *Defining Risk*, 17 POLY. SCI. 123 (1984). Setting aside quantum mechanical issues, there is a sense in which all risk is subjective, i.e., relative to some observer's knowledge set, since in a deterministic world the objective chance of an event's happening is always 0 or 1. See Larry A. Alexander, *The Morality of Criminal Law*, 88 CAL. L. REV. 931, 936 (2000) (discussing the inherently subjective character of risk assessments). Nevertheless, the coin toss hypothetical is "objective" for practical purposes because the precise landing of the coin is not knowable by any affected actor. Problems become more difficult when events can be predicted more effectively by some actors than by others, or can be predicted more accurately by choosing to invest additional resources in acquiring more knowledge about probabilities.

that the planner is never truly in the “ex post” position with no further need to advance the interests of parties ex ante through future rounds of multistage policies.

The “sure thing” or independence principle postulates that both citizens and planners ought to ignore any aspects of their risky choices where the result would be a sure thing. Experimental subjects do not behave that way, however. They are more risk averse regarding what happens to them under “heads” when what would happen to them under “tails” for sure is more attractive. There are a variety of quite rational reasons for that preference. Moreover, even if citizens were to observe the independence principle, it would be appropriate for a planner to reject it. If one party has favorable prospects for sure under “heads”, that is a reason to favor a different party under “tails” in order to reduce the inequality of prospects.

As to the value of equality, it is important to separate the welfare harms of inequality from the pure cost of inequality itself. The welfare harms of inequality are quite real but rational parties will fully incorporate the prospects for such harms into their ex ante decision making. The pure cost of inequality is better conceptualized with a prioritarian model than with a model that threatens to treat gains to a party as a moral negative. The prioritarian model provides the parties themselves as well as the planner with reasons for welfare risk aversion, but does not provide reasons for the planner to reject policies that are ex ante efficient.

