Julian Simon correctly argues that people discount what happens to their future selves in a curve more bowed than an exponential curve. His radical assertion that we relate to other people in the same way that we relate to future selves is also supportable, but his equation of social distance with temporal distance is an oversimplification. To show that empathic satisfactions can be treated like conventional economic goods, it is necessary to explain how emotional rewards, although available without fixed stimuli, are actually constrained by some kind of scarce condition. That scarce condition exists precisely because of highly bowed discount curves: maximal satisfaction from emotional rewards depends on their deferral and the consequent buildup of appetite for them; highly bowed discount curves create a relentless urge to harvest these rewards prematurely. Therefore, unless people peg their emotions to occasions that are both optimally unresponsive to their current wishes and optimally surprising, their emotional lives will have the highly satiated quality of daydreams. The richest source of external occasions to gamble on is the apparent experience of other people. This line of reasoning gives a better purchase than Simon's notion of social distance on how occasions for empathic reward are similar to conventional goods and thus can be reconciled with parsimonious economic models.

A Utility-Maximizing Mechanism for Vicarious Reward

COMMENTS ON JULIAN SIMON'S "INTERPERSONAL ALLOCATION CONTINUOUS WITH INTERTEMPORAL ALLOCATION"

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> Begging is a profession, like dentistry, like shining shoes. It's a service. Every so often you need to get a tooth filled or your shoes shined or to give alms. So when a beggar presents himself to you, you have to ask yourself, "Do I need a beggar today?" If you do, give him alms. If you don't, don't.
>
> A Rajasthani host in Tom Stoppard's play *Indian Ink*.

Author's Note: *I thank Barbara Gault for much reading and discussion of the manuscript.*

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Julian Simon's article argues that other people offer a person the same kind of emotional objects that his own future selves do—more or less kindred souls whom he has a variable interest in benefiting, proportionally to a single "distance" factor that may happen to be temporal or social or both. Furthermore, Simon's person discounts the importance of what events happen to that object in a curve that is more bowed than an exponential curve, confronting the person with the strategic problem of reversals of preference between two potential sets of events as a function of changes in this distance. The impact of his argument is to cut the Gordian knot that has entangled utilitarian discussions of altruistic versus egoistic motives and so to give full economic legitimacy to the motive of benefiting others: "An individual's discount weights vis-à-vis other individuals may be considered a full description of the individual in this connection" (Simon 1995 [this issue], 375-76).

As someone who has said that highly bowed temporal discount curves require a person to relate to future selves as if they were separate people (Ainslie 1975, 1992), I applaud this bold synthesis; but I believe that Simon, in his quest for parsimony, has oversimplified the way one person values another's experiences. The interests of a person's distant selves will one day inevitably be his interests, but the interests of a distant person are his only insofar as he arranges for that. I will eventually be the person I anticipate next year, but I do not necessarily have part of my brother-in-law within myself or share part of his interests. I certainly do not move through social distance the way I move through time, discovering at some point that I *am* him.

And yet, Simon has the important point right. Vicarious reward is a raw feel, as robust as food and pain; however, somehow economists and even psychologists have never authenticated it to trade in the same marketplace as "real" goods. I venture two guesses about why this has been so: (1) A person can freely undertake or abandon vicarious experiences and may interpret them in many possible ways. He may rejoice in another's success, but may also be threatened by it or amused by it; he may even take pleasure in another's pain. Thus vicarious reward does not seem constrained by the "scarce means" that are the usual object of economic analysis (Robbins 1962, 16). (2) Sympathizing with another person is so notably a behavior that theorists have a hard time counting it as also a reward. If something is a behavior and thus under the person's arbitrary control and is also a reward—the selective factor for behaviors—what prevents a positive feedback phenomenon that lets a person coin reward, as it were, at will? This has been a theoretical problem for most *process rewards*, those that do not seem to depend on an obligatory turnkey like food or sex, and is really another form of the first guess, the lack of constraint by some kind of scarcity.

In this article, I will try to augment Simon's case for the full comparability of vicarious rewards with other kinds, including his bold assertion that people's relationship with future selves is analogous to their relationship with other people. In doing so I will replace his concept of social distance with a mechanism derived from the expectable properties of intertemporal bargaining, which will be more specific but also more complex than his model.[1]

Vicarious Reward Is a Basic Good

The most convincing evidence that there is a primary motive to borrow other people's emotions, and thus also to influence the emotions to be borrowed, comes from instances where people exert themselves to rein in this tendency. Having noted examples of instinctive self-sacrifice, Simon cites Hayek's (1989) warning that members of a developed society must "discipline" such instincts. Commonplace examples of efforts not to spoil children, for instance, or to prevent the spontaneous feeding of zoo animals, imply an urge to gratify others that does not depend on ethical thought but instead runs counter to such thought. From a different angle, undergraduate subjects can be shown to avoid developing empathy for a stranger when they expect him or her to make a request for costly help (Shaw, Batson, and Todd 1994), in effect a self-control measure.[2] Simon's mention that altruistic behavior is sometimes "enforced by community norms or even the law" might seem to undermine his depiction of altruism as a basic instinct; an unharnassed basic instinct, however, may not be reliable enough for the needs of complex societies, especially when it must compete with instincts for rage, hoarding, pleasure seeking, and so on. Society may even need to countermand the kind of self-control elicited by the Shaw experiment, for instance, where the very failure to see vicarious reward as a substantial good may have led economists themselves to significantly restrict their altruism (as Simon points out—Marwell and Ames 1981; see also Frank, Gilovich, and Regan 1993).

Two major schools of thought about altruism bear on the nature of vicarious reward. Those authors who want to trace altruism to underlying selfishness cite cases where benefit to others does not motivate the beneficial behavior. But examples like the habitual blood donors whose satisfaction is said to come from cycle of fear and relief created by donations (Piliavin, Callero, and Evans 1982) do not contradict other examples that depend on seeing or imagining someone else's feelings, that is, where motives are truly empathic (Batson and Shaw 1991).

Another view is that even true vicarious motivation is not genuinely altruistic because it is still mediated by one's own private emotions. For

instance, Sen (1977) has written, "Behavior based on sympathy is in an important sense egoistic, for one is oneself pleased at others' pleasure and pained at others' pain, and the pursuit of one's own utility may thus be helped by sympathetic action" (p. 327). The implication is that sympathetic feelings may be the same ones that can be stimulated by just reading a novel and thus the two activities may not differ in kind. "It is action based on commitment rather than sympathy which would be non-egoistic" (Sen 1977, 327). However, commitment as well must have been undertaken to improve the person's satisfaction. Unless we want to endorse unmotivated choice, and so join the mystic schools of indeterminacy and vitalism, we must reduce the loftiest motives to the maximization of personal utility. It does not matter for our purpose whether warm feeling or cool discipline is a more admirable basis for altruism, given that each is chosen only insofar as it gives personal satisfaction. We are concerned with the warm feeling, vicarious reward. Simon's point is that this is the same as other rewards. To defend this position, we must examine the properties of vicarious rewards and whether they are constrained by some scarce condition that would allow them to behave as other limited goods in a marketplace.

Conventional Mechanisms Do Not Account for Vicarious Rewards

In common experience, events make us have feelings; "passion" implies an experience passively undergone. But feelings have no fixed turnkey like rewards based on physical needs; on examination, it soon becomes apparent that the "causes" of emotions are matters of interpretation and that people have extensive, perhaps total, freedom both to cultivate interpretations and to supply occasions arbitrarily when their environment does not. The clearest illustration of this is the skilled actor, whose emotions are "false" only in that they are not inspired by the actor's beliefs (Archer 1888; Russell 1978); I have given a fuller argument elsewhere (Ainslie 1992, 21-23, 135-42). The emotions are always available to be called forth, like notes that can be played on a piano.

The lack of robust constraints on emotional reward has made it seem softer than rewards that depend on a concrete stimulus. How does it come to depend on either one's own or others' life events? Behavioral science initially responded to this question with a search for turnkeys in the form of a special drive for curiosity, an intrinsic rewardingness of particular activation levels, and so on, and for learned associations with "hard" rewards; nevertheless, the search was a failure (Coombs and Avrunin 1977). The lack of a parsimonious model for constraining emotional rewards has made behavioral scientists segregate them from those with apparent biological authenticity.

Yet the observation remains that emotional rewards are the main goods sought after, at least in societies that are largely free of physical want. Something must support this vast structure of reward. If we cannot find pillars in the form of biologically programmed reward stimuli, we should look for cantilevers—indirect processes that may be prone to concealment.

Highly Bowed Discount Curves Predict Constraints on Emotional Reward

The highly bowed discount curves that both Simon and I have inferred from other data predict just such processes, that is, a mechanism for constraining emotional reward that rationalizes its equal competition with more concrete rewarding objects. We need assume only that maximal satisfaction from the most sought-after emotions (e.g., romance, relief, triumph) depends on some degree of deferral, that is, on the optimal creation of appetite, and that when such appetite does not dominate the person's motives, more negative emotions (e.g., anger, hypochondria, fear) are able to compete for his attention on the basis of their short-range payoffs. Highly bowed curves create a motive to obtain smaller, earlier satisfactions at the expense of larger, later ones, so that if a person does not peg his emotional behaviors to events outside of his immediate control, that person will exploit their reward potential wastefully, without letting the relevant appetite, perhaps best called *suspense*, develop optimally. This is the aesthetic disadvantage of daydreaming versus real life. Furthermore, increasing familiarity even with externally given patterns will erode the capacity to maintain suspense; the person's attention will rush ahead in his quest for earlier reward and make the daily routine, the predictable relationship, or the oft-repeated joke "old hat." Doubtless, this is a highly adaptive phenomenon from the viewpoint of evolution, for it motivates both increasing efficiency with old skills and a continual exploration that demands new ones (Ainslie 1992, 259-63). However, the experience of being subject to this motivational phenomenon is one of continually having to find patterns outside of one's control that will suitably occasion, or *pace*, his emotional reward.

Patterns that pace emotional reward are what function in place of the physical turnkeys as the scarce entity that limits emotional rewards. However, the scarcity is not of the pacing function itself but of appetite. The market for pacing patterns will behave like interpersonal markets that are saturated with the good being traded. The pacing patterns that win out over their competitors will be those that best sustain appetite.

The value of a pattern for occasioning emotional reward will depend on the aggregate discounted amount of reward that the person actually generates.[3] The discounting thus occurs from the times that the person generates the emotion, not from when the "emotion-provoking" events are anticipated. For instance, the fortune-teller, or guidance counselor, who forecasts wealth in one's future offers an occasion for emotional reward at the moment he or she tells this story, which will be worth much more than the discounted value of the predicted wealth, and the person will discount the prospect of such auguries in the future mostly from the time they will be made, not from the times of the events to be augured. This difference arises because the emotional reward does not depend on the occurrence of the events forecast, only on the occasion of the forecast itself.[4]

Thus the competition among possible patterns for occasioning emotional reward will be based largely on their aesthetic values. For instance, a story that has a high "flip value" and calls for an emotional punch every minute or so may be in close competition with a story that builds intense suspense and does not resolve for hours or days. Discounting the reward actually realized in a highly bowed curve, the person is apt to prefer the frequent peaks of the punchy story when actually among them, but to prefer the greater aggregate amount of the intense one at some distance before the choice. The aesthetic properties of a story or other pattern represent a combination of the individual's "taste" for the emotions it suggests[5] and the pattern's ability to defeat his or her urge for immediate relief. This ability in turn depends on such factors as the pattern's surprisingness and its uniqueness, that is, its standing out from alternative versions that might lure him or her into a faster-paying story line.

Of course, information that occasions emotional reward may also happen to predict physical turnkeys, from the prospect of a good meal to the likelihood of colliding with an approaching bus, and may predict the availability of other pacing patterns. Such predictions will add value as discounted from the expected time of these processes. Nevertheless, a pattern need not depend on its prediction of other events to compete for selection as an occasion for emotional reward. For instance, the truth or probability of a story may indeed affect its value as a pacer (apart from the instrumental use just mentioned), because real stories are rarer and thus more unique than are fictions generally. However, where global news gathering makes true stories as available as fictions, as in the ability of "infotainment" to find endless real examples of a particular script, this value is dissipated. The proximity of a story's events, both in time and space, also affects its rarity—there is less choice among the immediate and the nearby. However, proximity may be

overshadowed in determining a pattern's value by other factors in optimizing appetite. Thus a kiss from a movie star may be more valuable if one has a month to anticipate it than if it is to be immediate (Loewenstein 1987), and the value of other savoring patterns will differ from what either exponential or highly bowed curves predict when drawn only from the ostensible reward. The combination of highly bowed discounting and the sensitivity of emotional reward to appetite makes pacing patterns valuable, but the same appetite factor keeps many different pacing patterns in the race for selection.

Vicarious Experience Is a Robust Pacer of Emotional Reward

The best source of surprising, unique patterns is the behavior of other people. To some extent, people can occasion another's emotions without ongoing interaction—in the form of stories or memories they have created that can "live on" even after their deaths—but as the other becomes increasingly familiar with these remains, they must become stale. Ongoing interaction is obviously richer. A person who requires a particular reaction from another as the necessary occasion for an emotion always runs the risk that the other will evoke an unwanted urge like anger or disgust or fear. It is of course possible to cheat at this game, to hear only what one wants in what the other says, or fail to commit importance to the other's responses—not to gamble on him, the error of narcissism. But this is tantamount to exchanging a mutual game of cards for a game of solitaire, and perhaps even to cheating at the solitaire; such an impulse is punished by a loss of suspense, and hence of all but the shortest range reward.

Because emotional reward requires no turnkey and because other people's choices depend more on current interaction than on any static predictive factors, people soon learn that the best way to predict others is to use one's own experience to model theirs. We say, "If I were him, but were angry at X and had just been jilted by Y and hoped for a job with Z, what would I do?" We entertain the other's likely emotions and improvise from there. This process, however, yields more than just prediction. Because modeling other people is as good an occasion as any for emotional experience, the modeling process readily becomes a consumption good. The other's discernible feelings occasion our own. If we do not cheat too much—by discerning feelings without adequate basis, or changing empathic objects, too quickly when they have aversive experiences, or picking objects, such as movie stars who will not respond, —we may have a regular source of unique and surprising occasions for emotional reward. Information for refreshing the models by which we perceive other people becomes the scarce good that constrains this

otherwise too-available resource. This information is highly substitutable in the economic sense, but only at a cost, because the more often one substitutes empathic objects for each other the more his emotional reward becomes arbitrary and hence suboptimal.

Thus "social distance" is related to temporal distance, but in a way so indirect as to be of little conceptual use: Emotional reward is too close at hand to be well exploited unless we convert it into vicarious reward, that is, peg it to a relatively realistic perception of the emotions of a limited group of other people not chosen too arbitrarily. Because the people closest to us in Simon's sense are the most unique (we can have only one spouse, two parents, etc.), his scale of social distance will approximately predict degree of empathic engagement; indeed, a person may often surprise observers by his loyalty to a parent he has never met or to a child who hates the parent. However, this distance is only one of a number of factors that are apt to predict empathy and is not nearly robust enough to be the sole factor in an equation like Simon's.

The arbitrary accessibility of emotional reward strongly supports Simon's most daring assertion, however. We have seen how a person's predictions of emotional rewards in his own nonimmediate future behave somewhat like fictions, because the feelings evoked by the predictions themselves may have a higher value than the feelings predicted in the future, once temporal discounting is factored in. Indeed, the process of imagining a future self is not greatly different from that of imagining what it would be like to be another person. The main differences are that (1) a person's future selves cannot interact with the present self, so he cannot refresh his model of those selves with information from them; and (2) a person's future selves are uniquely his, while he or she has some choice about what other people to model. It is sometimes also important that (3) physical rewards will be uniquely his or hers and may foster emotions beyond what he would entertain vicariously. Allowing for these differences, it is probably true that one gets along with his future selves in much the same way that one gets along with other people, and that highly bowed discounting, although crucial to the strategy of maximizing reward in either activity, is not its monotonic determinant in either. (Ironically, here I differ with Simon, who makes it such a determinant in both.)

There is reason to believe that models of other people are the form in which a child first extensively organizes his experience. The psychoanalysts have written a great deal about how children construct selves through the introjection of others, that is, through "identifying" themselves with the people who have impressed them. The Kleinians, who have listened the most

to children's statements about themselves, make "internal objects" the basic elements of the continual mental foraging for emotional reward that they acknowledge under the name "phantasy" (Hinshelwood 1989, 68-83, 179-208). Certainly young children's theories of themselves are made up of a wide variety of incorporated objects (Schilder and Wechsler 1935). Just as allegory was a precursor to science, vicarious experience may be the starting place of individuals' conception of the world; and the adult self may be only the most constant group within a population of reward-pacing models that have been learned and shaped through the contingencies of emotional reward. These possibilities are explored elsewhere in more detail (Ainslie n.d.).

Some Empathic Relationships Are Invidious

A limitation of Simon's theory is that it counts all empathic relationships to be positive, that is, such that each person rewards himself proportionately to the other. This relationship could be called sympathetic. By contrast, people also reward themselves according to others' misfortunes—not through indifference, but by an actual aesthetic appreciation of their pain. The extreme of this relationship is the sadism of the torturer, but there are many well-socialized forms of rivalry that have a negative sign. Significantly, all theories of humor before the present century were based on gloating over another's misfortune. Such invidious relationships should also be counted as empathic because they involve modeling the object's feelings.

How empathic modeling may make negative objects—villains, enemies, scapegoats—useful and even necessary is a big topic. Simply put, the free availability of emotional reward is not an unmixed blessing. Not only does indulgence ad lib deteriorate through the overvaluation of immediate reward, but too-hasty reward patterns, once learned, will be hard to get rid of. Just as a drug addict will know even after years of sobriety that intense pleasure is only a phone call away, so a person who has overcome an addictive emotional pattern—dependency, promiscuity, timidity, exploitativeness, and so on—will always be able to reach for it under pressure. Having learned better long-range patterns does not mean having forgotten how to activate the old ones that feed some urge quickly; unlike the drug addict, this person cannot keep the unwanted activity distant by avoiding drug neighborhoods or taking naloxone. Faced with such resilience in the emotional patterns that have become a nuisance, the person often finds that he can arrange to punish them even though he cannot kill them: Insofar as they are organized by vicarious experience, the person should be able to occasion them by an empathic object who undergoes seduction followed by pain, and thus attach the pain to the

emotional pattern. Where the initial experience is rewarding enough, the whole sequence of transgression and punishment should be competitive with other prospective experiences at the point when it has to be chosen. Scapegoating—the creation of pain for the person one fears he is, the younger sibling showing the behavior one has barely outgrown, or the criminal who does what one is tempted to do—has lacked a rationale in utilitarian theory when reward was thought of as limited by the scarcity of appropriate turnkeys. In the world of emotional reward, however, it may be a ready control for possible experiences that have no sure means of restraint.

This model of vicarious reward is doubtless not the only one that could deduce the familiar characteristics of emotional life from highly bowed discount curves. Furthermore, I have only sketched the steps of the deduction here. My object has been to show that Simon's intuitions are compatible with the known results of parametric behavioral research, and that, by examining the possibilities he raises under a strict utilitarian discipline, we may discover methods of reconciling the richness of human experience with the parsimony of behavioral economics.

NOTES

1. I also have doubts about his proposed formula for highly bowed discounting. His exponential functions have an upward step in discount rate applied only to the most immediate time period, whatever its length, a pattern that seems unlikely to occur in nature and that contradicts the hyperbolic functions regularly found in controlled experiments (Green, Fry, and Myerson 1994; Stevenson 1986); however, because only the common property of being more bowed than exponential curves is important to the phenomena I am discussing, this problem can be skipped.

2. I have argued (Ainslie 1992, 216-24) that many kinds of character pathology represent systematic efforts to control spontaneous motives; this experiment suggests a mechanism whereby fear of "softness" might lead to alexithymia, the inability to notice feelings (Nemiah 1977).

3. Opting for emotional reward is a behavior in that it is goal directed, but this does not imply that it belongs to the subset of "deliberate" behaviors. To what extent the opting succeeds or comes up "dry" depends not on the events that occasion it but on appetite (see Ainslie 1992, 274-91).

4. However, the predictive value of the augury will affect its uniqueness as an occasion for feeling—see below.

5. This includes negative tastes, for example, an aptitude to lose one's temper or panic. Tastes may be complex, as with Eric Berne's (1972) "scripts." There are myriad possible bases of individual differences in tastes—genetic endowment, history of available occasions, commitment to avoid particular rewards, and presently little basis to speculate among them.

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