"The Prisoner's Dilemma" and Partner Pay

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Economists and evolutionary biologists share an interest in a model of incentives known as "the prisoner's dilemma." It is a game for two players with the payoffs arranged so that each player does better by behaving selfishly but the two would collectively be better off if each behaved altruistically. Two crooks are questioned separately about a crime they committed together. Each one gets a reduced sentence by ratting out the other ("defecting") but if they both keep their mouths shut ("cooperating") they avoid jail completely. When played repeatedly by the same players, "iterated prisoner's dilemma" (IPD) enables learning by experimentation as each player reacts in the next game to the other player's decisions in past games between them.

Since the 1950s the prisoner's dilemma model has been a mainstay of game-theoretic research in an extraordinarily wide range of settings. Some examples: Early in its history, the prisoner's dilemma was both a strategic metaphor for the thermonuclear arms race of that era. "Defection" in that context meant building an H-bomb arsenal and "cooperation" meant resisting that temptation.

Later on, biologists began to see IPD as a means for thinking about problems like the evolution of symbiosis (Crocodile: "Should I dine on that bird that's cleaning my teeth?) and altruistic behavior in animals. Economists wonder about the prisoner's dilemma-like incentives of an adversarial legal system in which hiring lawyers is somewhat like building H-bombs.

In IPD (as distinct from the one-shot version) players are thinking about how current moves may affect an opponent's future moves: "Can I teach him to cooperate by cooperating after he does?" In the one-shot game, defection is the dominant strategy – if your opponent defects when you do not, you're sunk. But when the game is played repeatedly, if both parties can develop a habit for cooperation they will achieve the best long-term outcome.

For the past thirty years is has been widely understood that the winning strategy in IPD is "tit-for-tat" – a cooperative strategy, notwithstanding its spiteful-sounding name. "Tit-for-tat" means a strategy of cooperation, retaliation, forgiveness and consistency in response to the other player's

actions. In experimental IPD tournaments, tit-for-tat proved superior and this widely-reported outcome has been a source of encouragement to those natural scientists and social scientists that see cooperation and altruism rather than selfishness as the successful evolutionary path in both nature and human relations.

Trouble is, it turns out that's wrong.

The underlying mathematics of the Prisoner's Dilemma is complex despite its outward simplicity. Very recently, William Press, (an improbable combination of astrophysicist, bioinformatics specialist, computational genius and oh-by-the-way current president of the American Association for the Advancement of Science) and Freeman Dyson (legendary theoretical physicist) developed and codified in equations new strategies that dominate tit-for-tat. It turns out that extortion, not altruism wins. As Dyson explains it:

> If Alice uses an extortion strategy, she can arrange things so that, no matter what Bob does and no matter how much payoff he gets, she will get three times as much. The only way for Bob to get even is to accept zero payoff, in which case Alice also gets zero. If Bob acts so as to maximize his own payoff, Alice's payoff is automatically maximized three times more generously.

At least in the math, all else equal, the jerks win.

Now it can be dangerous to impute a lot of real-life meaning to a mathematical model; sometimes that can be more rhetoric than it is reasoning. But I'm planning to take only a small step in that direction.

Most of us who are or have been responsible for overseeing partnership pay regimes know that striking the balance between *Woodstock* and *Animal Planet* is a large part of the task. *Woodstock*, in my vocabulary, means a partnership with a strong sense of shared fate and a cooperative pay scheme. A lock-step regime is one rather extreme variant.

Animal Planet is a partnership arrangement which in which the sharing element is small and which allows each partner to capture for herself most of the profit she creates. If the membership of each law firm were very like-minded about cooperation versus individualism, there would be no problem. It's not that one mode is always better than the other (e.g., that more cooperative firms always triumph in competition with more individualistic

ones) – there's no such rule. The real problem is dissention in the ranks of a partnership about where on the spectrum a firm's pay regime should fall.

In my experience, there are no rules to govern this decision. My point in introducing the subject with IPD and the Press/Dyson result is to say that it's misleading to use the now-upended 'superiority of cooperation' story as a reason for advocating a Woodstock-oriented pay regime. You may think that pay arrangements which fail to inculcate a strong sense of shared fate within *your* firm will condemn it to dissent and eventual dissolution. But bear in mind that somewhere nearby there is some other firm which, unlike yours, if subjected to a Woodstock pay regime would wind up with a low-energy bunch of sharers while the core of enterprising individualists has moved off.

What is a leader to do?

My answer is to make sure that your pay system has the potential for creating a balance and moving the balance point in response to changing sentiments over time. A *principled* compensation program that is *transparent in inputs*, is, I find, the best way to deal with this. "Principled" means explicit in its intentions about individualism and cooperation – as well as the other dimensions of pay.

"Transparent in inputs" means using metrics that link the mechanics of pay determination to the principles. Thus, members possess an explicit understanding about the determinants of pay outcomes, derived from a set of principles. It also means that members periodically receive information about performance across the dimensions of pay determination so that, without an exchange of envy-inducing pay outcomes, members can know how their pay was derived.

—Richard Rapp

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For some extracurricular reading about the prisoner's dilemma:

William Poundstone, *Prisoner's Dilemma* (New York, Anchor Books, 1993)

http://chronicle.com/blogs/percolator/to-the-trickster-go-the-spoils/30940

Orley C. Ashenfelter, et al., “Lawyers as Agents of the Devil in a Prisoner’s Dilemma Game: Evidence from Long Run Play” National Bureau of Economic Reseearch Working Paper 18834, February 2013.

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