

4. Game Theory and its Application to Penology

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Abstract:

Game theory is the study of the interactions that occur between rational decision-makers and the dynamics that influence strategic behaviors. Paramount to this approach is the realization that an individual's decisions are often influenced by the actions and/or anticipated actions of others. Of particular importance is Game Theory's capacity to explain the prison's disinterest and seeming inability to successfully promote offender rehabilitation. Herein the relationship existing between prisons and prisoners is viewed as a "game" designed to prevent an inmate "win". As such, contemporary prisoners have (in protest) chosen to oppose all forms of correctional intervention even when doing so is personally detrimental.

Keywords:

Game Theory, Penology, Rehabilitation, Prisoner's Dilemma, Early Release, Win, Sentencing, Good-time Credits

Game Theory and its Application to Penology

Introduction

Much has been written about game theory and its application to the social sciences. Game theory provides insight into human behavior by considering social interactions and the real or perceived gains or losses that they produce. Game theory has been used extensively by political scientists, military strategists, mathematicians and economists. Notably absent is the application of game theory to the field of “adult corrections”. Within this paper, we shall broadly apply game theory to penology while assessing its ability to provide insight into the larger criminal justice system. In doing so, we will be the first to apply game theory to criminological inquiry. By using an interdisciplinary approach, a more comprehensive understanding of the prison’s actions and seeming inability to reform its inmate population is obtained. We define a “game” as the ongoing interaction/relationship existing between the inmate population and the prison’s officials. Likewise, we define an inmate “win” as the ability to obtain an early release. Furthermore, we use the term “prison” generically, referring to both the institution as well as its officials. We assert that political leaders and prison officials alike have unwittingly created a situation where the inmate population is prevented from “winning”. This not only produces negative outcomes for the inmate population but for society as well in the forms of increased costs, victimizations and recidivism rates. By preventing an inmate “win”, officials have created a game whereby inmates are forced to:

individually oppose and disrupt correctional initiatives and prison operations,

create coalitions to mitigate the pains of their shared status, and

collectively resist the actions of those officials viewed as being responsible for creating and perpetuating this disadvantaged and powerless state.

Prison officials have never publicly acknowledged that this one-sided game exists or that contemporary processes benefit them directly. A by-product of this game is that it has

VOL 6 NO 3 AND 4 (2018) ISSUE- SEPTEMBER AND DECEMBER

ISSN 2347-6869 (E) & ISSN 2347-2146 (P)

Game Theory andBy Dr Michelle Blakely & Dr Curtis R. Blakely, Page No. 54-62

DOI: 10.5958/2347-6869.2018.00015.8

DOS: 2018-11-23 DOA: 2018-12-27 DOP: 2019-04-28

Journal Section: Political Science



created a situation whereby inmates (in protest), now oppose, impede and resist all correctional initiatives. This observation explains why current educational, vocational and therapeutic programming lacks inmate support and remains an under-utilized resource within our prisons.

Game Theory

While it is not necessary to provide an exhaustive review and analysis of Game Theory, it is important to note its origins and identify a few of its contemporary developers. Game Theory traces its modern genesis to the early part of the twentieth century and to a brilliant polymath by the name of Jon von Neumann (Kuhn & Tucker, 1958; Poundstone, 1993). Dr. von Neumann worked with two-person zero-sum games denoting situations where one player benefits at another player's expense. For example, in poker, the winner benefits to the same extent that his/her opponent loses. Von Neumann's efforts were followed by those of Oskar Morgenstern who applied this approach to cooperative games involving multiple players (Henn & Moeschlin, 1977; Prisner, 2014). Morgenstern sought broad insight into decision-making processes and how they are shaped by uncertainty. Both worked independently and jointly to expand the utility of Game Theory. More recently, scholars have applied this approach to a host of fields, garnering them many prestigious honors. Perhaps the most celebrated example involves the awarding of the 1994 Nobel Prize in Economics to John Nash. Professor Nash was widely acclaimed for his development of "equilibrium" (Mazalov, 2014; Newton, 2018; Prisner, 2014). Nash Equilibrium exists when a player is unable to benefit from a change in strategy until his/her opponents change their approaches as well. Without each player committing to such a change, the opportunity for a "win" remains elusive. To unilaterally change one's own strategy in pursuit of gain will ultimately prove ineffective in such a case. In other words, when a stalemate occurs within a game, all players must reevaluate their approaches and then act accordingly. In doing so, they create new opportunities for a "win". This dynamic explains why the inmate population, which finds itself in a stalemate with corrections officials, is unable to adopt any position other than its current strategy of opposition and resistance toward a system that likewise, refuses to modify its approach. And since no incentive exists for the prison to alter its own strategy, this "standoff" is maintained.

Prisoner's Dilemma

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An interesting scenario often appearing within Game Theory literature is the “Prisoner’s Dilemma” (Mazalov, 2014; Newton, 2018; Poundstone, 1993; Prisner, 2014). This illustration reveals why two rational individuals may fail to cooperate even when doing so proves beneficial. In our example, two young men have been jailed and are awaiting adjudication. They are co-defendants accused of the same crime. Prosecutors do not have enough evidence to convict either one on more significant charges, but evidence does exist to pursue convictions on lesser charges. Neither of our defendants has a strong relationship with the other and communication between the pair is prohibited. As is normal, prosecutors are pressuring each inmate for additional information in preparation for trial. This creates a series of actions that can be undertaken by either, or both, of our prisoners. For example, either can betray the other, resulting in a two year prison sentence for each; one can betray the other by turning state’s evidence while the second inmate remains silent, resulting in freedom for the first and a three year sentence for the latter; or both can refuse to provide the sought-after information, and in doing so, each serve only a one year sentence. Since each prisoner is rational and is motivated by self-interests, one might expect that each will betray the other even when the greatest gain (or the least amount of loss) would have been the result of their silence. In this case, both offenders thought that the other would take the prosecutors’ deal. As such, each provided information about the other, resulting in a two-year sentence for each. Yet, if both prisoners had simply refused to provide this information (i.e. cooperated amongst themselves), each would have essentially “won” this game by serving the least amount of time possible (this is functionally equivalent to earning an early release).

The Game

In this example, it becomes obvious that rational individuals are motivated by personal gain (or the minimization of loss) and often base their decision-making processes on the actions or anticipated actions of others. Like these imaginary prisoners, real-world inmates are also players in a “game”. To “win” this game, they too must serve the least amount of time possible. Therefore, the potential for an early release proves paramount. The opponent in this “game” is the prison whose “win” is exemplified by maintaining institutional capacity, and if possible, achieving growth. To “win” this game, the prison must discourage participation in treatment programs while withholding opportunities that

promote inmate rehabilitation. This ensures that the causes of criminality remain unaddressed, thereby creating a perpetual clientele. Add this clientele to the steady-stream of new offenders that arrive weekly, and the need for the prison's services increases as does the amount of tax revenue that it consumes. A "win" for the prison, as you can clearly ascertain, is reflected in its ability to promote its permanency and growth. Both assure that its voracious appetite for tax revenue is continually fed.

Within the parameters of this "game" (as in every game) there is always a winner and a loser. The interesting part of this "game" is that it is designed to ensure that the prison always "wins". In fact, as the game is currently played, an inmate is prohibited from obtaining an early release even if he/she has achieved a rehabilitated state. Under previous indeterminate approaches, offenders were given a minimum and maximum sentence range. For example, an offender may have received a 3 - 5 year sentence. This "range" imbued correctional authorities with the ability to release an inmate when he/she had achieved or was nearing a rehabilitated state (provided the minimum sentence had been satisfied). In this example, a rehabilitated inmate could earn early release after having served just 3 years. Under this approach, rehabilitation is incentivized - and it is through personal change that an inmate can "win" his/her release. Because of this possibility, more inmates were rehabilitated (as substantiated by historically lower recidivism rates) and therefore, achieved a "win" under indeterminate sentencing initiatives.

However, under a determinate sentencing approach where an offender receives a fixed sentence (i.e. 5 years) that does not include a sentence range, the possibility of an early release based upon inmate reform is eliminated. This removes all personal incentives for rehabilitation. Current recidivism rates substantiate this observation (most sources report this rate to now exceed 70%). Furthermore, the use of good-time credits (which award inmates 2 days for each day served) has widely been adopted by most states. These credits are given to those inmates who comply with the institution's rules. While the primary purpose of these credits is to serve as a management tool, they also divert inmate attention away from the fact that early releases, of the kind previously granted, have now been eliminated. And while it appears that early release remains a possibility through the earning of these credits (which seem to reduce an inmate's sentence by 50% - we refer to this as the 50% rule), all sentence reductions are deceptive since the granting of good-time

credits has already been factored into each inmate's sentence/term of incarceration. This has resulted in sentence-inflation and unnecessarily lengthy prison stays. Currently, the United States has the longest sentences and terms of incarceration of any industrialized nation (Collier, 2014; Wagner & Sawyer, 2018; Ye Hee Lee, 2015). These sentencing approaches send very different messages about the value and abilities of the inmate population. For example, we would certainly contend that an indeterminate approach clearly values rehabilitation, respects individual offenders, and eagerly invests in their future successes. Likewise, it might be argued that determinate sentencing withholds/discourages rehabilitation and in doing so implies that offenders are undeserving of assistance. Game Theory recognizes that players often take their cues from their fellow players and make decisions based upon their actions and anticipated actions. This suggests that the actions of our correctional institutions influence the actions of the inmate population. If the prison devalues offender reform, then in all probability, so too will its inmates.

Suggestions

To rectify this situation, a few suggestions are in order. These suggestions are intended to restore legitimacy and fairness to the "game" while helping re-ignite personal and institutional interest in rehabilitation. Our suggestions are as follows:

re-adopt indeterminate sentencing approaches to return our judicial and correctional systems to their pre-determinate status, or

create an indeterminate option within determinate sentencing (we refer to this as the Hybrid Approach).

Our first suggestion requires no explanation since the history and use of indeterminate sentencing is well documented. It is our second recommendation that requires elaboration. Under the Hybrid Approach, an inmate would by default, serve his/her entire sentence as stipulated by the judge. However, early release could be earned, provided that the inmate had achieved, or was nearing, a rehabilitated state. For example, if an offender received a 5-year sentence, he or she could expect release following the conclusion of the fifth year. However, early release could be granted at any time after half the sentence had

been served (although each state could set its own requirement). The 50% rule would not need to be jettisoned entirely. Instead, release could still occur at or near the halfway point of the sentence (to mimic the use of good time credits), provided that such a decision is based upon offender reform and not just time served. This would incentivize rehabilitation and create the possibility of an inmate “win”. The Hybrid Approach would incorporate features of both indeterminate and determinate initiatives while eliminating those characteristics that are counterproductive to societal interests. For example, it would permit early release as a reward for personal reform while sanctioning the prolonged incarceration of those inmates not ready to reenter society. This approach differs from traditional indeterminate sentencing in that a sentence range is not used. Furthermore, it differs from current determinate approaches since it prohibits early release based solely upon time served. One would expect this to increase inmate participation in all forms of educational and therapeutic programming while having a positive effect on recidivism rates. It is important to understand that in the absence of such an opportunity, inmates (in protest) have largely chosen to remove themselves from the “game” since their participation provides no immediate or tangible benefit. It would appear to be in the best interest of society to create a “game” whereby inmates are given an incentive to pursue educational, vocational and treatment opportunities. By ensuring that an early release is possible, inmates are provided an option that does not currently exist. One thing is certain, in the absence of such an incentive, inmates will continue to resent current approaches and will refuse to participate in treatment programs.

Conclusion

While much has been written about the application of Game Theory to the social sciences, this paper represents its first application to the field of penology. Conceptualizing the relationship between prisons and prisoners as a “game” provides insight into the motivations, strategic behaviors and decision-making processes of its players. As it is currently played, contemporary prisoners are prohibited from “winning” this game. Under previous sentencing schemes, an inmate could “win” his/her release provided that a rehabilitated state was achieved or was substantially achieved. Currently, no such opportunity exists. By removing the incentive for early release based upon achieving a rehabilitated state, officials have ensured the continuing escalation of

recidivism rates. Officials should acknowledge that this one-sided game benefits the prison directly through the promotion of its own permanency and growth, and in doing so, has produced a situation that has forced inmates into a position where they must oppose, impede, and resist all correctional initiatives. And while it appears that the use of good-time credits provides a mechanism for early release, such an approach proves to be nothing more than a management tool to ensure compliance with institutional rules. Game theory can be appropriately applied wherever opponents and strategic decision-making processes exist. Therefore, it can provide added insight into other areas of the criminal justice system including police-community relations, probation and parole processes, approaches to drug and alcohol treatment, and judicial interactions with both offenders and victims. It is our hope, that other criminal justice scholars will apply this approach to their own areas of inquiry, and in doing so, achieve a greater understanding of how to improve the efficiency and effectiveness of our system.

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Cite this article:

Game Theory and its Application to Penology

Citation Format: APA

Blakely, M. L., & Blakely, C. R. (2019). Game Theory and its Application to Penology. *SOCRATES*, 6(3 and 4), 54-62. Retrieved from <https://www.socratesjournal.com/index.php/SOCRATES/article/view/363>

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