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When Immediate Responses Fail

Shai Dothan*

ABSTRACT

Tit-for-tat is a strategy of immediate and proportional responses. Game theorists showed that this strategy often leads to fruitful cooperation. Indeed, many legal regimes resemble a tit-for-tat strategy and benefit from its ability to avoid unnecessary conflicts. But in situations of uncertainty—when actors cannot be sure about the actions of their adversaries—a tit-for-tat strategy would destroy cooperation and lead to continuous clashes. Because tit-for-tat responds immediately, a single mistake about the intentions of the adversary can lead to retaliation and start an endless string of counterstrikes. When uncertainty prevails, a strategy of many-tits-for-many-tats is optimal. Actors applying this strategy study the actions of their adversaries over multiple rounds without issuing an immediate response. Only when the actor is convinced that the adversary intentionally defects, will the actor issue a disproportionately forceful response. The laws of war, criminal law, and international sales law all face some situations of uncertainty. This Article argues that each of these legal fields adopts a strategy of many-tits-for-many-tats to address conditions of acute uncertainty.

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TABLE OF CONTENTS

I. INTRODUCTION.....	1076
II. THE TIT-FOR-TAT STRATEGY AND ITS WEAKNESSES.....	1080
A. <i>When Tit-for-Tat Is Optimal</i>	1081
B. <i>A Delayed Response Deals Well with Noise</i>	1082
C. <i>Using Stronger Penalties to Sustain Deterrence</i>	1084
III. PROPORTIONALITY AND THE LAWS OF WAR	1086
A. <i>"Armed Attack" and the Accumulation Doctrine</i>	1089
B. <i>Jus Ad Bellum Proportionality</i>	1090
C. <i>Blurring the Lines Between Jus Ad Bellum and Jus in Bello</i>	1092
IV. DISPROPORTIONATE PENALTIES FOR REPEAT OFFENDERS	1093
A. <i>Why Career Offenders May Deserve a Higher Penalty</i>	1096
B. <i>Incapacitating Career Offenders</i>	1098
C. <i>Improving Deterrence for Career Offenders</i>	1099
V. DELAYED RESPONSES IN INTERNATIONAL SALES LAW ...	1101
A. <i>Non-Legal Sanctions in Contractual Relations</i>	1103
B. <i>Tit-for-Tat under the CISG</i>	1104
C. <i>The Nachfrist Notice Procedure</i>	1106
VI. CONCLUSION	1107

I. INTRODUCTION

The rule of law depends on several foundational principles: the procedures that determine the existence of a legal breach and the form of the legal retaliation must be clear,¹ wrongdoers can be punished only after they violate the law,² and the response used against them must be proportional to the gravity of the breach³ and issued close to the time of the breach itself.⁴ These principles

1. See LON L. FULLER, *THE MORALITY OF LAW* 63–65 (rev. ed. 1969) (arguing that clarity is a crucial condition for legality).

2. See *id.* at 53 (highlighting that while some rules within a system that is generally prospective can profitably have a retroactive effect, designing a legal system that is entirely retroactive is unthinkable, because law is intended to direct human conduct).

3. See VICTOR TADROS, *THE ENDS OF HARM: THE MORAL FOUNDATIONS OF CRIMINAL LAW* 331–34 (2011) (explaining that the right to cause only a proportional harm to the harm caused to you or to the harm you can prevent by punishment is a general principle that underlies many fields of the law, including the laws of war and criminal law); Thomas A. Franck, *On Proportionality of Countermeasures in International Law*, 102 *AM. J. INT'L L.* 715, 715–16 (2008) (suggesting that the general principle that countermeasures for transgressions must be proportional runs through the law, covering areas as different as the laws of war, constitutional law, and trade law).

4. See GEORGE P. FLETCHER, *BASIC CONCEPTS OF CRIMINAL LAW* 13–14 (1998). A statute of limitations—preventing criminal prosecution after a set period of time—is a procedural principle that underlies criminal law. It is justified as a

concur with the attributes of a tit-for-tat strategy, a strategy that was found to lead to cooperation between parties in a variety of situations. A tit-for-tat strategy is clear (easy to understand), nice (does not defect first), retaliatory (responds immediately), and forgiving (responds proportionately).⁵

Consider the rule that a country may respond to hostilities directed against it by another country that do not amount to an “armed attack” only with steps that are immediate, necessary, and proportional.⁶ Or the rule that allows only proportional responses as a countermeasure even against an armed attack.⁷ These are clear examples of a tit-for-tat strategy. In interactions between well-organized countries of similar strength, this strategy allows each country to gauge the intentions of the other, promoting cooperation and preventing deterioration into war.

But in interactions between a stronger, well-organized country and a weaker country that cannot control militants acting from its own territory, a tit-for-tat rule can lead to a cycle of attacks and counterattacks. The stronger country may mistake hostilities by militants acting from the territory of the weaker country as deliberate attacks by the weaker country. If the stronger country responds immediately, the weaker country may retaliate, and both countries will spiral into a series of counterreprisals culminating in war.

If, however, countries were allowed to delay their response as they analyzed the actions and intentions of the other country and after a while respond with disproportionate force, the deterioration may be prevented. Furthermore, future aggression can be prevented by incapacitating or weakening the enemy, not just by deterring it. If a stronger country is allowed to use disproportionate force, it can minimize the ability—not only the motivation—of the weaker country to harm it. What is needed to serve these goals is simply a doctrine of many-tits-for-many-tats.

Developments in the international laws of war follow this logic. They allow a country to accumulate several small attacks against it that do not individually constitute an “armed attack” and treat them all as an armed attack that deserves a strong response.⁸ Furthermore, even a response to an armed attack is constrained by some level of proportionality, but states can aggregate several armed attacks, using the so-called “pin-pricks” doctrine, and respond to all of them together with a force far greater than that mandated by each individual attack.⁹

check on the state's powers of investigation and prosecution without reflecting on the morality of the criminal act itself. *Id.*

5. See ROBERT AXELROD, *THE EVOLUTION OF COOPERATION* 54 (1984).

6. See *infra* Part III.A.

7. See *infra* Part III.B.

8. See *infra* Part III.A.

9. See *infra* Part III.B.

Criminal law offers another example of this dynamic. Usually, criminal sanctions are directed at a specific violation of the law and are proportional to the gravity of the violation. The state therefore uses a tit-for-tat strategy against potential offenders. Some jurisdictions, however, adopt disproportionate penalties against repeat offenders that are intended to remove such offenders from society for a very long time. One form of escalating punishments for repeat offenders is the so-called “three-strikes-and-you’re-out” rule.¹⁰ These rules are directed against recidivist offenders that chose a life of crime and are likely to commit more crimes in the future if released (career offenders). The ability to aggregate information over several offenses before a disproportionate response is used allows the state to separate these career offenders from offenders who committed a single offense without adopting crime as a way of life. Even if the state knows that an accused committed an offense with certainty, it is only the accumulation of offenses that allows the state to know this crime is not a result of a mistake or a one-time opportunity, but rather the actions of a career offender.

A third strike can separate a career offender from society and incapacitate his ability to commit more crimes.¹¹ The disproportionate response that is meted out as a “third strike” might deter potential career offenders from committing even their first crime because they know they may not be able to avoid committing crimes in the future and therefore a first crime increases the chances that they will end up suffering this greater penalty.¹²

International sales law offers another example for a legal regime that is generally committed to proportional responses. The United Nations Convention on Contracts for the International Sale of Goods (CISG)¹³ allows a party to an international business contract to respond to a breach by the other party in a proportional

10. The most severe and the most famous “three strikes and you’re out” law is probably the one that went into force in California in March 1994. This law counts as a “strike” every conviction for a serious or violent felony (some examples include murder, rape, robbery, kidnapping, burglary committed in an occupied house, drug sale to minors, or a felony committed with a deadly weapon). A criminal with one “strike” who is convicted of any later felony—even if it is not a “strike”—will face a doubling of the sentence for the later conviction and cannot be released before 80 percent of that sentence is served. A criminal with two “strikes” convicted of any additional felony will face a prison sentence of 25 years to life and cannot be released before serving 80 percent of the 25-year term. See Eric Helland & Alexander Tabarrok, *Does Three Strikes Deter? A Non-Parametric Estimation*, 42 J. HUM. RESOURCES 309, 309–10 (2007). Many other states have passed similar laws to which the same analysis applies, see Joanna M. Shepherd, *Fear of the First Strike: The Full Deterrent Effect of California’s Two- and Three-strikes Legislation*, 31 J. LEGAL STUD. 159, 159–60 (2002).

11. See *infra* Part IV.B.

12. See *infra* Part IV.C.

13. United Nations Convention on Contracts for the International Sale of Goods, art. 50, April 11, 1980, 1489 U.N.T.S. 3 [hereinafter CISG].

manner.¹⁴ If the breach is fundamental, the damaged party can avoid the contract, releasing it from all its contractual obligations.¹⁵ If the breach is not fundamental, the damaged party can only take certain countermeasures that are proportional to the gravity of the breach and intended to save the contract.¹⁶ In addition, it can also sue the other side for damages.¹⁷

Nevertheless, if a seller—in breach of the agreement—does not deliver the goods on time, the buyer may set an extended period for fulfilling the contract. The buyer has to inform the seller of this extended period in what is known as a “Nachfrist Notice.”¹⁸ If the seller does not deliver within the extended period, the buyer can avoid the contract, thereby responding disproportionately to a continuing violation even if it does not constitute a fundamental breach. The grace period given to the seller allows the buyer to gauge the seller’s intentions before issuing that disproportionate response.¹⁹

These examples demonstrate that legal systems often have a preference for immediate and proportional responses and, by this, favor a tit-for-tat strategy. This Article argues that in some situations—particularly in conditions of uncertainty—a disproportionate and delayed response is preferable as it can deter more effectively and prevent the ability to commit future violations. A strategy of many-tits-for-many-tats that allows the responder to aggregate several wrongful actions toward it before it responds with a strong sanction may therefore be sometimes preferable. This analysis justifies and explains certain legal regimes that contradict the predominant tit-for-tat strategy.

Part II describes the tit-for-tat strategy, the game theory that supports its use, and the situations in which it will lead to inefficient results. Part III presents the laws of war that usually prevent countries from responding disproportionately to hostilities against them and reviews several cases in which a disproportionate response is nevertheless legal. Part IV presents the benefits of disproportionate penalties for repeat offenders in criminal law. Part V reviews a disproportionate response to breach of contract in international sales law as an exception to the general proportional responses allowed by the CISG. Part VI concludes.

14. See *infra* Part V.B.

15. CISG, *supra* note 13, art. 49(1)(a), 64.

16. See *infra* Part V.B.

17. See *infra* Part V.B.

18. CISG, *supra* note 13, art. 47(1), 49(1)(b).

19. See *infra* Part V.C.

II. THE TIT-FOR-TAT STRATEGY AND ITS WEAKNESSES

In some situations, cooperation is a strategically wise choice: all drivers are better off driving on the right side of the road in New York and on the left side of the road in London. These situations are known in game theory as coordination games.²⁰ They only require a good source of information and a little patience to lead rational players to cooperative behavior that is beneficial to both of them.²¹

Unfortunately, not all situations in life can be modeled as a coordination game. There are situations in which the rational thing for both parties to do is to betray each other. The most notorious situation of this kind is known as the *prisoner's dilemma*. The metaphor behind the prisoner's dilemma is a story in which two accomplices are caught in the middle of a crime. The police put them in separate rooms and make each the same exact offer: "If you choose to rat on your friend and he stays silent, you will get out without a penalty and your friend will stay in prison for a very long time. If you confess and so does your friend, you will both get a couple of years in prison. If you both stay silent, you will both go to prison for only one year. Finally, remember that we made your friend the same offer."²²

A rational prisoner would quickly realize that the smart thing to do is always to rat on his partner. If the partner stays silent, the snitch would go home scot-free. If the partner confesses, telling the police what you know can reduce your penalty from many years to just a couple of years in prison. Given that both prisoners are rational and egoist, they would always betray each other.²³

The tragic thing about the prisoner's dilemma is that if both prisoners confess, they would both go to prison for a couple of years.

20. See JACK L. GOLDSMITH & ERIC A. POSNER, *THE LIMITS OF INTERNATIONAL LAW* 11–12 (2005) (explaining that one of the reasons countries respect international borders is simply coordination—the countries want to avoid conflict and they do not have a particular interest to increase their border at the expense of their neighbor); THOMAS C. SCHELLING, *THE STRATEGY OF CONFLICT* 54 (1960) (giving examples of strategic coordination in everyday life); Tom Ginsburg & Richard H. McAdams, *Adjudicating in Anarchy: An Expressive Theory of International Dispute Resolution*, 45 WM. & MARY L. REV. 1229, 1244–45 (2004) (Describing games of pure coordination—such as the decision on which side of the road to drive—and distinguishing them from mixed motive games in which parties have both shared and conflicting interests. Many disputes between nations can be modeled as mixed motive games).

21. See SCHELLING, *supra* note 20, at 57 (suggesting that people who want to coordinate around a choice can usually do so even absent communication by discerning clues or "focal points" using their imagination and prior information about each other); David S. Law, *A Theory of Judicial Power and Judicial Review*, 97 GEO. L.J. 723, 757–64 (2009) (explaining how courts can solve coordination problems by providing a "focal point" that parties can coordinate around to avoid a conflict).

22. See DOUGLAS G. BAIRD, ROBERT H. GERTNER & RANDAL C. PICKER, *GAME THEORY AND THE LAW* 33 (1994) (describing the prisoner's dilemma with slightly different values that follow the same logic).

23. *Id.* at 34.

They could have each spent just one year in prison if only they cooperated and decided to keep their lips sealed. When the game is played only once, however, this cooperation is impossible because both parties have an incentive to betray each other regardless of what their partner chooses to do.²⁴

But when the prisoner's dilemma game is played multiple times, cooperation can certainly emerge.²⁵ Both parties can realize that defecting may mean they get a bigger reward for this round, but it can also provoke the other side to defect in future rounds. In contrast, being nice this time around may mean you gain only a small reward, but it can motivate the other party to play nice in the future.²⁶

This does not mean that it pays to play nice all the time. Nobody wants to be the sucker and lead the other side to think that it can always take advantage of your kindness. Clearly, a good strategy needs to react to the actions of the other party and to try to maximize your own rewards, knowing that the other side does the same. The question is how to do that. What is the best strategy to play the prisoner's dilemma game?

A. When *Tit-for-Tat* Is Optimal

Political scientist Robert Axelrod offered a practical solution to this problem. He constructed a tournament for computer programs that played multiple rounds of a bilateral game with

24. *Id.*

25. See KEN BINMORE, GAME THEORY: A VERY SHORT INTRODUCTION 71–76 (2007). If a prisoner's dilemma is played for a set number of times, parties will still not cooperate because everyone knows that in the last round defection would occur, which means that defection is the smart strategy in the round before that, and so on using backward induction until the beginning. However, cooperation can emerge in an indefinitely repeated prisoner's dilemma. The insight that parties can cooperate in an indefinitely repeated prisoner's dilemma is so famous and uncontroversial that it is known as a "folk theorem." *Id.*

A similar problem to the prisoner's dilemma only with multiple members instead of two parties is the so-called "tragedy of the commons." The tragedy of the commons is exemplified in situations in which farmers share a common grazing ground. For each farmer, it pays to have more cows using the common pool, no matter what the others do. But if all farmers add more cows, the grass will not regenerate and all the cattle will die. See generally Garrett Hardin, *The Tragedy of the Commons*, SCI. MAG., Dec. 13, 1968, at 1243. Scholars have shown that multiple-player prisoner's dilemmas can also be solved when the parties are able to cooperate and prevent free riding by other players. See MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS 33–34 (1965) (explaining that small groups are better able to prevent free riding than bigger groups, because in small group each member gains enough from cooperation to have an incentive to enforce cooperation on other members); ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 6–14 (1990) (explaining that in real life situations people can change the rules of multiple-player prisoner's dilemmas and foster cooperation; by empirically studying successful cases of cooperation, the conditions that allow cooperation to emerge can be distilled).

26. See BINMORE, *supra* note 25.

positive rewards that complied with the prisoner's dilemma logic. Each program was matched with every one of the others, and the rewards of all the matches were averaged.²⁷ Scientists tried to win the tournament by programming all kinds of strategies—some of them very complicated—but the definitive winner of the tournament was the tit-for-tat strategy.²⁸

This simple strategy—devised by the Canadian psychologist Anatol Rapoport—played “cooperate” in the first round, and then repeated whatever the other party played in the previous move.²⁹ The result was that tit-for-tat gained the highest average reward from all the other programs in almost all iterations of the tournament.³⁰

When called upon to account for the unusual success of the tit-for-tat strategy, Axelrod explained that it combines four different qualities that together make it a winner: (1) it is *nice* enough to start the game with cooperation, which prevents the less vicious programs from punishing it with defection; (2) it is *retaliatory*, which convinces the other programs not to try to take advantage of it; (3) it is *forgiving*, which helps it to avoid an endless spiral of reprisals, at least in some situations; and (4) it is *clear* enough to be understood by the other programs, which is a prerequisite for long-term cooperation.³¹

B. A Delayed Response Deals Well with Noise

Now imagine that you take away tit-for-tat's last and most important advantage: its clarity. Everybody can understand tit-for-tat because every one of its actions is accurately registered by its opponent who quickly figures out the strategy behind it. What if you added some noise to the system? If tit-for-tat plays “cooperate” but the game-master manipulates its actions into a “defect,” cooperation can break down pretty easily. To take a simple example: two friendly tit-for-tat programs in this predicament will fall into an endless vortex of defections, just because of a single manipulation.³²

Tit-for-tat benefits from being clear to its opponents, but it also benefits from its ability to quickly retaliate toward offenses and to quickly forgive an opponent who shifts back to cooperative

27. AXELROD, *supra* note 5, at vii-viii.

28. *Id.* at viii.

29. *Id.*

30. *Id.* at 48.

31. *Id.* at 54.

32. If both programs are manipulated to defect at the same round, they would both respond by defecting in all future rounds. If program A defects once, program B would respond by defection in the next round. While in the next round program A would again cooperate, copying the actions of program B in the previous round, program B would now defect. The round after that program A would defect in response, while program B would play cooperate. This weird sequence of cooperate-defect pairs would go on indefinitely unless there are future manipulations. See AVINASH K. DIXIT & BARRY J. NALEBUFF, *THE ART OF STRATEGY* 76 (2008).

behavior. Adding noise makes tit-for-tat's quick response time into a disadvantage. The noise added into the system can mistakenly provoke tit-for-tat to defect. Many adversary programs would not take tit-for-tat's defection lying down and would respond by defecting in later rounds.

Scholars have experimented with "noisy" tournaments to determine which strategy is superior in conditions of uncertainty—when the true actions of adversaries are not known for sure. One group of scholars invited experts to send programs to compete in a tournament quite similar to Axelrod's tournament, only with an element of noise that would overrule the choices of the programs in some randomly selected rounds of the game. To make things more interesting, the tournament allowed each player to choose the level of cooperation between zero and one hundred in every round instead of making a binary choice to defect or cooperate, while still preserving payoffs that form the prisoner's dilemma.³³ The result: tit-for-tat placed eighth out of thirteen programs submitted to the tournament, a very poor performance indeed.³⁴ As one would suspect, tit-for-tat spiraled into unnecessary circles of reprisals because its reactions are immediate. In a noisy environment, immediate responses fail.

Who won this noisy tournament? The winner was a program called "nice-and-forgiving." This program did not react immediately to every case of noncooperation. Instead, it continued to cooperate fully as long as the cooperation level of its adversary did not fall below a certain threshold. The program even ignored a single case of extreme defection to study whether its opponent would continue this militant line.³⁵ The logic behind the winning program was to retaliate only when it was convinced that the opponent's defection was intentional and not simply noise.³⁶

When "nice-and-forgiving" played with an identical program in the noisy environment, their average cooperation level was ninety-nine out of one hundred: close to perfection despite the noise.³⁷ In contrast, a "tit-for-tat" playing against itself averaged seventy-one out of one hundred, reflecting the spiral of unnecessary reprisals generated by the noise.³⁸ More generally, generous programs in the noisy tournament that did not rush to punish their

33. Jonathan Bendor, Roderick M. Kramer & Suzanne Stout, *When in Doubt...Cooperation in a Noisy Prisoner's Dilemma*, 35 J. CONFLICT RESOL. 691, 694 (1991).

34. *Id.* at 696.

35. *See id.* at 707–09 (giving a description of the strategy). This nice strategy even dropped its cooperation gradually when the opponent fell below the threshold. In addition, the "forgiving" part of this strategy was manifested by going back to play full cooperation when the adversary passed certain thresholds of cooperative behavior. *See id.* at 697.

36. *See id.* at 706.

37. *See id.* at 697.

38. *Id.* at 696–97.

adversary for low levels of cooperation did better than programs that were more retaliatory.³⁹ The longer the game continued, the more chances there were for vengeance resulting from noise. Therefore, retaliatory programs would do worse and worse compared to generous ones.⁴⁰

The results of the noisy tournament described here were repeated in other experiments. The literature confirmed that when there is uncertainty about the behavior of the other side, it is better not to respond immediately and with the same level of defection.⁴¹ It is better to give the other side the benefit of the doubt.

C. Using Stronger Penalties to Sustain Deterrence

One constraint of the tournaments described above, however, is a bit misleading. In the tournaments, players are stuck with their opponents for as long as the gamemaster decided in advance. Real life is not like this. If somebody rips us off repeatedly, we are entitled to stop doing business with him. A disproportionate response may simply be a way of terminating a bad relationship.

The example from international sales law is instructive. If delaying the response allows a contractor to make sure that her interlocutor cannot be trusted, the best response is to cut the connection and annul the deal. This may be a disproportionate response, but its purpose is not to punish or to deter, just to prevent any further harm.

Another constraint of the tournaments described above is that the actions of each player are known only to its adversary. Other players cannot learn the behavior of actors they did not interact with. They cannot be deterred by a program that acts aggressively *vis-à-vis* its adversary. Programs cannot build a reputation that exceeds the program they are currently paired with.

In contrast, every criminal system realizes that the main objective of criminal law is to deter *potential* criminals.⁴² Once the crime has already been committed, it may cost more to punish the criminal than the gains society would achieve from incapacitating his ability to commit crimes or from his rehabilitation. However, the penalty may deter other potential criminals from committing similar crimes because they want to avoid a similar punishment.

39. *Id.* at 701.

40. *Id.* at 706.

41. See Jianzhong Wu & Robert Axelrod, *How to Cope with Noise in the Iterated Prisoner's Dilemma*, 39 J. CONFLICT RESOL. 183, 185 (1995). In a repetition of Axelrod's tournament with 1 percent of noise—turning defection into cooperation and cooperation into defection—the highest score was reached by a "generous" version of tit-for-tat that cooperates 10 percent of the time when a simple tit-for-tat would defect. Generosity is intended specifically to break the cycle of reprisals. *Id.*

42. See Richard A. Posner, *An Economic Theory of Criminal Law*, 85 COLUM. L. REV. 1193, 1205–14 (1985) (discussing the deterrent function of criminal law using economic analysis).

To the extent that potential criminals are rational agents, they will commit crimes only if the benefits from the crime outweigh the costs of suffering the penalty multiplied by the probability of being punished.⁴³ The generosity manifested in letting certain crimes go without punishment may be necessary to ensure that only career offenders are punished, but at the same time it reduces the probability for all criminals of being punished for their crimes. The simple solution to get the optimal level of deterrence—envisioned already by Gary Becker, who pioneered the rationalist view of criminals—is to increase the magnitude of the penalty.⁴⁴ Other things being equal, increasing the magnitude of the penalty will compensate for the lower probability of punishment to reach the optimal level of deterrence.⁴⁵

But what if the punishment is very costly for the punisher? In the example of a powerful country facing smaller enemies, war may be useful to degrade the military capacity of its rivals and it may also serve as a deterrent for future aggressors, but it is extremely costly and dangerous. Imagine a situation in which a powerful country is surrounded by ten militant groups. It is not able to incapacitate all of them at a reasonable cost. If all ten militias attack it at the same time, the country would not be able to initiate a full war against all of them without suffering unacceptable losses. Is a disproportionate counterattack even an option for a country in this predicament?

For the threat of a disproportionate attack to be effective, it must be credible. Traditional game theory thinking would not generate a credible threat under the conditions described above. The reason is that if nine militias attack the country, the country does not have an incentive to initiate a full-scale war against the tenth militia because this war would not deter anybody else anyway. This makes sure that the tenth militia would decide to attack. That implies, in turn, that when militia number nine decides whether to attack or not, it can be guaranteed that militias one to eight as well as militia number ten would all choose to attack, giving the state no incentive to initiate a war against it. Militia number nine would therefore choose to attack, giving exactly the same incentive to militia number eight and so on, in a process known as “backward induction.” This process would continue until all militias choose to attack. Under this logic, the powerful country does not have any credible threat that can deter its enemies.

Nevertheless, as Reinhard Selten demonstrated in what he called “the chain store paradox,” human beings tend to behave in

43. See A. Mitchell Polinsky & Steven Shavell, *The Economic Theory of Public Enforcement of Law*, 38 J. ECON. LITERATURE 45, 47–48 (2000).

44. See generally Gary S. Becker, *Crime and Punishment: An Economic Approach*, J. POL. ECON. 169 (1968).

45. See *id.* at 180–85.

situations such as these using limited rationality that contradicts the logic of backward induction.⁴⁶ For the powerful country, the right thing to do is to fight extremely aggressively against the first militia that attempts an attack. This will take that militia out of the game and send a deterring message to all the others. Even if the militias know that the powerful country cannot initiate a war against all of them at the same time, they may all be effectively deterred.

The upshot of this analysis is that once delaying the response guarantees a high probability of identifying an intentional attack, a disproportionately strong counterstrike is mandated. Sometimes the disproportionate counterstrike would prevent the possibility of future transgressions. If that is not possible, it may optimize deterrence given that some intentional attacks would go unpunished. Even if there is no credible threat to respond disproportionately to all future attacks, a disproportionate counterstrike may be the only effective deterrent, which works because of the limited rationality of human behavior.

To sum up, in conditions of uncertainty, an immediate reaction may lead to harmful and unnecessary reprisals. The smart thing to do is to delay the response until enough information is gathered to discern that offenses are intentional. But then the counterattack must be disproportionately strong to incapacitate or to effectively deter the transgressor and other possible transgressors. The following Parts demonstrate how this logic works out in different areas of the law.

III. PROPORTIONALITY AND THE LAWS OF WAR

On May 26, 2015, a large rocket exploded in the southern Israeli town of Gan Yavne.⁴⁷ The explosion caused a fifteen-year-old girl severe anxiety and she was evacuated to a nearby hospital.⁴⁸ This was the very first time a rocket of this size and range was fired from Gaza since the 2014 Israel-Gaza conflict, also known as Operation Protective Edge.⁴⁹ During that operation, more than 4,500 rockets and mortar bombs were fired at Israel.

46. See Reinhard Selten, *The Chain Store Paradox*, 9 THEORY & DECISION 127, 127–33 (1978). When a chain store faces potential competition by local stores in many different cities, it can use predatory pricing to fight off the opening of competitor stores in these cities, but it cannot lower prices to fight potential competitors in all the cities at the same time. Just like in the example described above, backward induction would suggest that competitors would arise in all the cities, but a deterrence theory that decides to fight aggressively against the first competitors may deter all competitors from entering the market. *Id.*

47. See Matan Zuri et al., *First Since Protective Edge: Grad Fired from Gaza. The IDF Attacked in the Gaza Strip*, YNETNEWS (May 27, 2015), <http://www.ynet.co.il/articles/0,7340,L-4661653,00.html> [<https://perma.cc/H6A5-TWTK>] (archived Aug. 16, 2018).

48. See *id.*

49. See *id.*

Sixty-eight Israeli soldiers and five civilians were killed, while Palestinian casualties totaled more than 2,100.⁵⁰

Nobody on the Israeli side knew exactly who fired the rocket, which broke the long silence following the recent catastrophic conflict.⁵¹ Rockets of this size are held and even locally produced by the military wing of Hamas, the organization that controls the Gaza strip.⁵² Israelis assessed that the leadership of Hamas feared the grave consequences of another conflict with Israel.⁵³ But the military wing of Hamas was more aggressive and may have tried to provoke Israel by firing the rocket.⁵⁴ Nevertheless, it is also possible that the rocket was fired by a competing organization called Islamic Jihad, which is financed by Iran.⁵⁵ The leadership of this smaller organization was probably also interested in preserving the ceasefire, but some armed groups within the organization may have wanted to take a more militant line.⁵⁶ Finally, it is also possible that the rocket was fired by some splinter group from the extremely radical Islamic Salafi movement.⁵⁷ These fanatic groups fight a bloody war against Hamas, which arrested many of their men.⁵⁸ They may have had an interest in plunging Hamas into a conflict with Israel to revenge these arrests.⁵⁹

What should Israel have done? Preserving the deterrence against Hamas was crucial. It was the only way to ensure an end to the rocket fire on Israeli cities. If Israel would have known for sure that Hamas was responsible for this rocket, a proportional

50. The exact number of Palestinian casualties and the proportion of civilian casualties to militants killed are fiercely debated. See ANNEX—PALESTINIAN FATALITY FIGURES IN THE 2014 GAZA CONFLICT A-2 (2014), <http://mfa.gov.il/ProtectiveEdge/Documents/PalestinianFatalities.pdf> [<https://perma.cc/X2AU-XTCR>] (archived Aug. 16, 2018) (noting that 44 percent of the Palestinian casualties were militants); Paul Farhi, *Reporters Grapple With Politics, Erratic Sources in Reporting Israeli/Gaza Death Toll*, THE WASH. POST (Aug. 4, 2014), https://www.washingtonpost.com/lifestyle/style/reporters-grapple-with-politics-erratic-sources-in-reporting-israeligaza-deathtoll/2014/08/04/c02ab282-1c10-11e4-ae540cfe1f974f8a_story.html?noredirect=on&utm_term=.40c76e5453e3 [<https://perma.cc/9D6D-6GBA>] (archived Aug. 6, 2018); *Ministry: Death Toll from Gaza Offensive Topped 2,310*, MA'AN NEWS AGENCY (Jan. 3, 2015), <http://www.maannews.com/Content.aspx?id=751290> [<https://perma.cc/722T-2MRW>] (archived Aug. 5, 2018) (reporting that Palestinian deaths totaled over 2,300).

51. Ron Ben-Yishai, *Challenging the Leadership of Israel and Hamas*, YNETNEWS (May 26, 2015), www.ynet.co.il/articles/0,7340,L-4661681,00.html [<https://perma.cc/R89H-DNFV>] (archived Aug. 16, 2018).

52. *Id.*

53. *Id.*

54. *Id.*

55. *Id.*

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.*

counterstrike would be the logical thing to do to maintain deterrence.⁶⁰ This is what the tit-for-tat strategy recommends.⁶¹

Given the uncertainty about the identity of the shooters, however, a tit-for-tat strategy would be a problematic choice. What if the rocket was fired by groups that only wanted to weaken Hamas by provoking an Israeli response? And what if Hamas is provoked by an Israeli response and retaliates by firing more rockets? The entire situation can easily escalate into war.

If, however, Israel would decide not to retaliate—or to strike back in a way that would not cause much harm to Hamas and would likely not lead to a counterstrike—long-term deterrence may suffer. Hamas may use the uncertainty about its actions to strike Israeli cities whenever it wants. Therefore, if Israel decides not to respond to each individual strike, it must make clear to Hamas that every rocket is registered. Once enough transgressions accumulate to make it absolutely clear that Hamas has fired or supports the firing of rockets, Israel will respond with disproportionate force—much greater than that mandated by each individual strike. Expecting that, Hamas will hopefully be deterred. Furthermore, if Israel initiates such a powerful counterstrike it can significantly degrade the military abilities of Hamas, by hitting munition silos, arms factories, and military personnel. This would make it physically impossible for Hamas to launch intensive strikes against Israeli citizens in the future.⁶² In other words, what is required from Israel is a strategy of many-tits-for-many-tats.

Would such a strategy be legal under international law? Every real-life example presents many unique features which raise specific legal questions,⁶³ but the issue of military counterstrikes under conditions of uncertainty is not unique to Israel. The United States and other countries participating in the war on terror face a

60. Cf. Alon Cohen & Raphael Bitton, *The Threshold Requirement in Asymmetric Conflicts: A Game Theory Analysis*, 16 CHI. J. INT'L L. 43, 48, 78 (2015) (showing through game theory that a swift military response to terrorism by a powerful country against a weaker adversary can minimize terror attacks, but also noting that this solution often does not occur because parties are able to communicate and negotiate alternative solutions).

61. See AXELROD, *supra* note 5, at 79–80. Retaliation for attacks deterred the enemy and ensured some level of coexistence between the enemy sides in the trenches of World War I. The soldiers usually responded with a more extreme strike than the attack targeting them. However, because not every bullet fired actually hit its target and because the other side noted that the counter-attack is a retaliation, escalation was often prevented. *Id.*

62. One concentrated attack has another advantage over many small skirmishes for the stronger country: the longer the hostilities continue, the better the weaker army becomes and the greater the disintegration of the stronger army. See Martin van Creveld, *Power in War*, 7 THEORETICAL INQUIRIES L. 1, 5–8 (2006) (explaining that the weaker side always learns and evolves as it finds a stronger enemy, whereas the stronger enemy backslides both because it does not face military challenges and because it will inevitably be portrayed as either a villain or incompetent).

63. For a discussion of many of the unique legal problems of the Israel–Hamas conflict see HAMAS, THE GAZA WAR AND ACCOUNTABILITY, UNDER INTERNATIONAL LAW (Mark Ami-El ed., Jerusalem Ctr. for Pub. Affairs 2011).

very similar predicament. To accommodate the need of these countries, international law is evolving. Doctrines are forming that allow states to wait instead of responding immediately and then to strike back with a force proportionate to the aggregate of all transgressions but wildly disproportionate to each individual transgression. Such doctrines are the subjects of the next subparts.

A. “Armed Attack” and the Accumulation Doctrine

The laws of war are divided into two categories: (1) *jus ad bellum*: the laws that set the conditions under which countries may use armed force or fight a legal war and (2) *jus in bello*: the laws that regulate the conduct of armies during war. Before investigating the types of military actions armies can employ at war under *jus in bello*, countries must make sure that the use of force is at all legal under *jus ad bellum*.

The most fundamental rule of *jus ad bellum* is enshrined in Article 2(4) of the United Nations Charter. It declares that countries “shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state[.]”⁶⁴ But this rule has an important exception: countries have the right to use self-defense in response to an “armed attack” according to Article 51 of the Charter.⁶⁵

An “armed attack” means the use of force by entering the territory of another country or firing weapons across the border.⁶⁶ However, to constitute an armed attack, this assault must be of some minimal level of gravity.⁶⁷ Scholars have disputed the exact scale and effects that are necessary to form an armed attack, but even scholars setting a very low threshold usually require some threshold of severity to classify an assault as an armed attack.⁶⁸

This means, of course, that some assaults could occur that would not count as armed attacks. Countries are not allowed to use self-defense in response to such assaults. But must the victims of these assaults sit and do nothing? Not exactly. Countries are allowed to respond by taking measures that are similar to self-defense but do not reach the same level of intensity.⁶⁹ The view of some international lawyers is that countries are allowed to

64. U.N. Charter art. 2, ¶ 4.

65. *Id.* art. 51; *see also* YORAM DINSTEIN, *WAR, AGGRESSION AND SELF-DEFENCE* 197 (6th ed. 2017) (discussing Article 51).

66. DINSTEIN, *supra* note 65, at 208.

67. *Id.* at 206.

68. *Id.* at 209–11; *cf.* David Kretzmer, *The Inherent Right of Self-Defence and Proportionality in Jus Ad Bellum*, 24 *EUR. J. INT'L L.* 235, 242–43 (2013) (referring to some scholars that require different thresholds of severity to constitute an armed attack and to some sources that do away with this requirement altogether).

69. *See* DINSTEIN, *supra* note 65, at 207 (discussing the International Court of Justice holding that such lawful measures that are similar but less grave than self-defense are allowed).

retaliate against assaults that fall short of armed attacks with force which falls short of self-defense.⁷⁰ The retaliation must be strictly necessary, proportionate, and immediate in time.⁷¹

This doctrine of retaliation possesses the qualities of the tit-for-tat strategy. The doctrine allows countries to swiftly respond in kind to attacks against them and creates a perfect deterrent in situations of symmetric rivals with full information. However, when countries are not sure who attacked them—a common situation in asymmetric warfare—this tit-for-tat strategy can prove disastrous. It can plunge both countries into a series of countermeasures that would quickly escalate into all-out war.

Ignoring incidents short of armed attack is not an option in a situation of asymmetric warfare either. This would allow the aggressor to take advantage of the generosity of the victim and keep launching small attacks with impunity. What is required is a doctrine of many-tits-for-many-tats and such a doctrine exists under international law.

Scholars have argued that an accumulation of assaults that each fall short of an armed attack may collectively constitute an armed attack.⁷² Countries are therefore allowed to study their opponent and calculate the gravity of all its assaults taken together. When the combination of all the small assaults reaches the level of an armed attack, the country may respond by using self-defense, which implies a much greater ability to use force than the level allowed for countermeasures short of self-defense. International lawyers have therefore formed a strategy of many-tits-for-many-tats that allows countries to better address situations of uncertainty.

B. Jus Ad Bellum Proportionality

Even if a country were subject to an armed attack—whether through a single big assault or through the accumulation of several smaller ones—the country does not get license to respond as intensely as it pleases. An armed attack awakens the right to self-defense. Self-defense does give a country the right to retaliate much more forcefully than it could to transgressions that do not constitute an armed attack, but the scale of the retaliation is still limited by the rules of *jus ad bellum*.

70. *Id.*

71. See Case Concerning Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. Rep. 161, 331–33 (Nov. 6) (separate opinion by Simma, J.).

72. See DINSTEIN, *supra* note 65, at 211 (discussing support for the view that events can cumulatively equal an armed attack that allows for self-defense); Christian J. Tams, *The Use of Force Against Terrorists*, 20 EUR. J. INT'L L. 359, 388 (2009); *Cf.* Case Concerning Oil Platforms (Iran v. U.S.), Judgment, 2003 I.C.J. Rep. 161, 333 (Nov. 6) (separate opinion by Simma, J.) ("there is in the international law on the use of force no "qualitative jump" from iterative activities remaining below the threshold of Article 51 of the Charter to the type of "armed attack" envisaged there").

If an attack is in progress, the attacked country is allowed to use force that is necessary for the purpose of repelling that attack.⁷³ However, scholars have argued that countries are allowed to use force not just in order to halt an ongoing attack.⁷⁴ Even after the attack has ended, another legitimate purpose for using force is to deter the enemy that initiated the attack from committing future attacks.⁷⁵ The enemy must realize that further attacks will be reciprocated and will prove costly for it as well.⁷⁶

When a country sets out to deter future attacks by an aggressor, it is constrained to retaliate in a manner proportional to the scale and the effects of the initial attack.⁷⁷ In other words, scholars limit the response countries are allowed to use against an armed attack by a tit-for-tat rule.⁷⁸

As mentioned regarding incidents falling under the threshold of an armed attack, in situations that involve two well-governed and equally powerful states, a tit-for-tat rule may lead to optimal deterrence and minimize conflicts. Both countries will consider that their actions will be answered in kind and try to preserve the peace. However, countries that are facing a much weaker enemy that cannot fully restrain militants operating from its border are facing the same dilemma described in the previous subpart. Responding immediately and with proportionate force may play into the hands of dissident groups and spark a conflict both sides would like to avoid. In contrast, ignoring persistent attacks may easily be abused by a rival country.

What is required is a strategy of many-tits-for-many-tats: delaying the response to the armed attacks, but when several attacks pile up, issuing a powerful response. Once again, international lawyers view this reasonable solution as legally legitimate. Scholars have argued that when a country is subjected to a series of separate attacks, it is allowed to respond by using one powerful counterstrike.⁷⁹ Scholars refer to each one in the sequence of armed attacks as a “pin-prick.”⁸⁰ The response to a series of “pin-pricks” needs to be proportional to the *aggregate* effect of the entire sequence of attacks.⁸¹

73. See Kretzmer, *supra* note 68, at 269–70.

74. See *id.* at 268–69.

75. *Id.*

76. *Id.*

77. See *id.* at 269, 272.

78. *Id.*

79. Robert Ago (Special Rapporteur to the International Law Commission), *Eighth Report on State Responsibility*, ¶ 121, UN Doc. A/CN.4/318/ADD.5-7 (1980).

80. DINSTEIN, *supra* note 65, at 275.

81. *Id.*

C. *Blurring the Lines Between Jus Ad Bellum and Jus in Bello*

A final area in which the logic of many-tits-for-many-tats is echoed by the laws of war concerns the diluting of *jus in bello* obligations for countries fighting a just war. Traditionally, international law drew a sharp distinction between *jus ad bellum* and *jus in bello* obligations. Even if a country is allowed to use force under *jus ad bellum*, it is still constrained by *jus in bello*—for example, it cannot cause excessive harm to civilian targets even when pursuing legitimate military objectives.⁸²

Lately, however, scholars have called for blurring the dichotomy between *jus ad bellum* and *jus in bello*. They realized that in recent conflicts the international community was willing to grant extra leeway in the application of *jus in bello* rules if the use of force was particularly justified under *jus ad bellum*.⁸³ In other words, when a country fights an especially just war, the international community tends to accept harsher military methods as legitimate.⁸⁴

The potential for abuse engrained in this trend is obvious. Every country tends to think its cause is just and to use every ambiguity for its benefit.⁸⁵ Countries could reciprocate the harsh measures taken against them and dropping the constraint of *jus in bello* rules may plunge both sides into committing horrible crimes. Scholars have realized that and suggest that strict rules like the prohibition against intentionally killing civilians should not be bent even when fighting a just war.⁸⁶ In contrast, the vague standards of *jus in bello*, such as the prohibition against causing excessive harm to civilians when attacking military targets, are quite imprecise anyway and they do not provide real protection, particularly in cases of asymmetric conflicts where both parties are trying to overwhelm and shock the enemy.⁸⁷ Scholars have therefore argued that in modern asymmetric conflicts, accepting the trend which allows harsher methods—challenging the normal boundaries of *jus in bello*—when conducting a just war is recommended.⁸⁸ This trend can give the international community a fuller and more truthful picture of the military conduct of countries.⁸⁹

Relaxing the boundaries between *jus ad bellum* and *jus in bello* can serve a strategy of many-tits-for-many-tats. Countries that hold back and do not respond to repeated attacks can prove to

82. See FRANCOISE BOUCHET-SAULNIER, *THE PRACTICAL GUIDE TO HUMANITARIAN LAW* 509 (3d English Language ed. 2014).

83. Eyal Benvenisti, *Rethinking the Divide Between Jus ad Bellum and Jus in Bello in Warfare Against Nonstate Actors*, 34 *YALE J. INT'L L.* 541, 544–45 (2009).

84. *Id.*

85. See Ariel Zemach, *Indeterminacy in the Law of War: The Need for an International Advisory Regime*, 43 *BROOK. J. INT'L L.* 1, 12–13 (2017).

86. Benvenisti, *supra* note 83, at 546.

87. *Id.*

88. *Id.* at 548.

89. *Id.*

the international community that they gave peace a chance and were forced to go to war against their wishes. Once the international community views such a country as fighting a just war, the country may get a special permission to engage in particularly harsh military tactics, which strain the boundaries of traditional *jus in bello* doctrines.

The analysis in this Part suggests that while the laws of war traditionally embrace a tit-for-tat strategy, they tend to accept a strategy of many-tits-for-many-tats, particularly in situations of asymmetric warfare where such a strategy is recommended by a game theoretical analysis. Countries subject to assaults that do not constitute an armed attack are usually constrained to strictly proportional responses. But these countries can accumulate many assaults and view them together as an armed attack, opening the door to a much harsher response while executing the right to self-defense. When a country is subject to repeated armed attacks, it can respond with disproportionate force that equals the aggregate severity of the entire series of attacks launched against it. Finally, a country that restrained itself in the face of numerous attacks may be viewed as fighting a just war. There are powerful voices in the international community calling to release such a country from some *jus in bello* obligations, allowing an extreme military response.

IV. DISPROPORTIONATE PENALTIES FOR REPEAT OFFENDERS

The most fundamental tenet of criminal law is that criminals can only be punished after they have been convicted of a crime beyond a reasonable doubt.⁹⁰ In other words, criminal punishment is only justified when a court is certain that the accused committed a crime. The entire premise of this Article is that a strategy of many-tits-for-many-tats is useful in situations when punishment is meted out under conditions of uncertainty. Are such conditions even relevant for criminal law?

There have been theoretical suggestions to modify the system that requires a high threshold of certainty before any criminal penalty is justified. Some scholars have suggested combining the probabilities that a suspect committed several distinct crimes to deduce that he committed at least one *unspecified* crime beyond the required threshold of certainty.⁹¹ Others have suggested adjusting the level of punishment to the degree of certainty that a suspect committed a crime instead of requiring a minimal threshold of

90. See Alon Harel & Ariel Porat, *Aggregating Probabilities Across Cases: Criminal Responsibility for Unspecified Offences*, 94 MINN. L. REV. 261, 265 (2009).

91. See generally *id.*

proof.⁹² Nevertheless, these suggestions are categorically opposed to the laws existing in most criminal systems.

Traditional criminal law requires a minimal level of certainty in the sense that the court must be convinced that a specific person committed a specific crime. The question is why? What will happen if an innocent man will be convicted of a crime he did not commit? The answer cannot be based purely on considerations of deterrence. It may seem intuitive that if an innocent man is convicted, deterrence will suffer—because his choice between alternative courses of action will be not guided anymore by the fear of punishment. However, the picture is a bit more complicated than that. If a crime has a tangible consequence such as robbery or murder, the possibility of convicting the wrong person will not damage the deterrence of potential criminals. If the crime is not committed, nobody will be convicted, giving potential criminals an incentive not to commit the crime in order to avoid punishment. The more distant possibility of being convicted of a completely different crime committed by somebody else does not change depending on the potential criminal's actions and therefore does not damage the incentive not to commit crimes.⁹³ Convicting the innocent will actually damage deterrence only under very refined and rare conditions.⁹⁴

It seems that the reason criminal law is committed to the requirement of certainty has to be based on non-consequentialist grounds. It is immoral to punish people for a crime they did not commit, even if this punishment will lead to beneficial results. At the same time, when somebody does commit a crime, he incurs a duty to remedy the consequences of his actions. The criminal system is therefore allowed to cause harm to true criminals in pursuit of instrumental goals such as increasing deterrence.⁹⁵

Scholars that adhere to a strong version of retributivism would go even further. They would argue that the criminal system is allowed to punish criminals in a manner proportional to the severity of the crimes they have committed, and some would say that the government is required, not only permitted, to issue this penalty.⁹⁶ This strong version of retributivism adopts a tit-for-tat rule—it envisions the punishment of every crime with a proportional penalty.

92. See generally Talia Fisher, *Conviction Without Conviction*, 96 MINN. L. REV. 833 (2012).

93. See generally Henrik Lando, *Does Wrongful Conviction Lower Deterrence*, 35 J. LEGAL STUD. 327 (2006).

94. See *id.* at 332. These conditions include a situation where the legal system mistakes the nature of the act committed, giving criminals an incentive to commit a more severe crime instead of a less severe one if that increases their payoff, for example bringing a real gun instead of a toy gun to a robbery. This analysis is similar to the problem of marginal deterrence—if the criminal receives a high penalty anyway, why would he avoid committing a more severe crime? *Id.*

95. See TADROS, *supra* note 3, at 2–4.

96. See *id.* at 1–2.

Every legal system has to deal with some uncertainty. Because the methods of establishing legal truth are imperfect, some innocent people will inevitably be convicted and some guilty people will inevitably be acquitted. The fear of convicting the innocent is reflected not in denying the possibility of false convictions, but in the proportion of false convictions to false acquittals that the system is ready to accept. Scholars have even developed a formula that finds the connection between the level of certainty required to convict and the proportional value society puts on these two mistakes.⁹⁷ Obviously, the more damaging the conviction of the innocent and the less damaging the acquittal of the guilty, the more certainty should be required before conviction.⁹⁸

Nevertheless, legal systems are generally committed to the idea that it is mandatory to prove to a high level of certainty that a criminal committed every act he is punished for. This contradicts the conditions that call for a strategy of many-tits-for-many-tats: that there is a high level of uncertainty about the commission of each individual transgression and only the accumulation of several transgressions attests to the fact that an individual is intentionally misbehaving.

This Part will therefore not say anything about convicting people who were not proven guilty beyond the high threshold of a reasonable doubt. Instead, it draws a distinction between two types of criminals: “career offenders”—people who chose a life of crime—and “incidental offenders”—people who have committed a crime but do not intend to pursue crime as a way of life. The legal system is convinced that both criminals committed the crimes of which they were convicted. It is legitimate to punish both of them on retributivist grounds. However, issuing a more severe penalty to career offenders may be beneficial for society for instrumental reasons. The strategy of many-tits-for-many-tats is not manifested by delaying the conviction of criminals for their first criminal acts. Instead, it is manifested by issuing a much harsher penalty once several convictions have accumulated, because these repeated convictions indicate that the crimes were committed by a career offender. The criminal laws of numerous jurisdictions adopted doctrinal solutions that follow that logic.⁹⁹ This Article will focus on one such doctrinal solution: the “three-strikes-and-you’re-out” rule.¹⁰⁰

This Part proceeds by first investigating whether it is at all legitimate on retributivist grounds to distinguish between career offenders and incidental offenders and to punish the former more severely. It then draws on empirical evidence and theoretical

97. See John Kaplan, *Decision Theory and the Factfinding Process*, 20 STAN. L. REV. 1065, 1073–77 (1968).

98. *Id.*

99. See George P. Fletcher, *The Recidivist Premium*, 1 CRIM. JUST. ETHICS 54, 54–55 (1982).

100. See generally Helland & Tabarrock, *supra* note 10.

arguments that concern the activation of the “three-strikes-and-you’re-out” rule to establish whether treating career offenders more harshly can actually reduce crime. This analysis takes into account the response of criminals to actual or potential penalties and suggests that criminal law bears some resemblance to the repeated prisoner’s dilemma game described above.

A. *Why Career Offenders May Deserve a Higher Penalty*

The logic of many-tits-for-many-tats recommends issuing a much more severe penalty for the last in a series of convictions. This type of penalty may or may not be beneficial for society; as the next subparts show, this is a complicated empirical question. But some retributivists would say that proving that a disproportional penalty is beneficial for society is not enough to justify it. A penalty is justified only if it is fair; that is, if the criminal deserves it. Only after establishing that a penalty is fair is it permitted to ask what the consequences of punishment are.¹⁰¹

Scholars have reviewed several potential justifications for disproportionately punishing recidivists. One possibility is to claim that a person that was already convicted of several crimes and persists to commit crimes is expressing a clear defiance of the state’s authority, which justifies a harsher penalty. However, scholars have argued that this ground for punishment is morally flawed.¹⁰² In a liberal society, punishment is not meted out to cement the authority of the state as it is in dictatorial regimes.¹⁰³ Although a contrite criminal may receive some leniency from the state, a defiant criminal does not deserve to be punished more than a contrite criminal, because his actions were not more reprehensible.¹⁰⁴

The privilege of the state to be more lenient than the criminal deserves raises another possibility: perhaps all penalties for non-recidivists are deliberately lenient and only recidivists get the punishment they deserve. From this perspective, the punishment of recidivists is not disproportional to the severity of their crimes; it only seems out of proportion to the deliberately mild punishments issued for first-time offenders. It is true that some jurisdictions use recidivism only as a reason not to be lenient compared to what an offense deserves. However, many recidivist

101. Michael Davis, *Just Deserts for Recidivists*, 4 CRIM. JUST. ETHICS 29, 35 (1985).

102. *Id.*

103. *Id.*

104. *See id.* at 35–36. Even Andrew von Hirsch—who supposedly argued that a repetitive offender is more culpable because he defies the authority of the state—denied that he made this argument. Von Hirsch clarified that he only suggested previous convictions could weigh against granting a lenient judgment, which is justified on other grounds. *Id.* (citing ANDREW VON HIRSCH, *DOING JUSTICE: THE CHOICE OF PUNISHMENT* (1976)). *See also* GEORGE P. FLETCHER, *RETHINKING CRIMINAL LAW* 465–66 (2000) (describing Von Hirsch’s argument).

penalties clearly give a disproportionately high penalty for a repeated offense, and some—like the three-strikes-and-you're-out rules—do not even aspire for any connection with the last crime committed, they simply lock somebody up for good.¹⁰⁵ Unless you are committed to the strange proposition that every felony deserves a life sentence—which would clearly preempt any serious discussion on the fairness of penalties—this line of argumentation cannot explain many forms of harshness toward recidivists.¹⁰⁶

The most promising avenue to justify severely punishing recidivists passes through a peculiar thought-experiment devised by the philosopher Michael Davis.¹⁰⁷ Imagine that people are forced to buy a license to commit crimes in a public auction. This strange image takes into account the fact that committing crimes is a way to take advantage of society in an unfair way. People who commit crimes gain from breaking the rules that govern society and they should be made to pay for that in proportion to the damage they cause to society.¹⁰⁸ This logic would dictate that more severe crimes receive more severe penalties. It may also suggest that recidivists receive a slightly higher penalty, because in order to get the right to commit multiple crimes they should be made to buy a special license—a license to buy several licenses to commit crimes.¹⁰⁹

Davis's analysis is helpful, but it can only explain a marginally higher penalty for recidivists. It cannot even begin to explain laws such as three-strikes-and-you're-out. However, a slight modification to the rules of the auction would provide a better justification. In Davis's thought-experiment, the state cannot know the identity of the person bidding for the right to commit crimes.¹¹⁰ In contrast, his analysis acknowledges the possibility of an auction where people reveal their true character before they buy the license.¹¹¹ If the state can know who the bidder is, it may require a much higher price for licensing a professional criminal than for licensing an amateur.¹¹² The professional criminal may know much better than a non-professional how to use crime to his advantage.¹¹³ Even more importantly, he may get away with many crimes without getting caught.¹¹⁴ When a professional criminal buys a license, the actual damage to society is particularly high.¹¹⁵

105. See Davis, *supra* note 101, at 31.

106. See *id.* at 39.

107. See generally *id.*

108. See *id.* at 38–39.

109. See *id.* at 41–43.

110. *Id.* at 40.

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.*

It is an empirical question whether recidivists are really professional criminals or not.¹¹⁶ But the possibility that the state can reveal the character of criminals by observing them over a long time is exactly what many-tits-for-many-tats is all about. Many-tits-for-many-tats is superior in a noisy environment, where the true actions of adversaries cannot be ascertained with absolute certainty. Nevertheless, an accumulation of many signals helps form a picture of the strategy of the adversary. Similarly, when a person is caught and convicted of several crimes, the state can deduce that he is a career offender. As the auction metaphor demonstrates, career offenders deserve a higher penalty, because their propensity to take advantage of the rest of society is greater than that of incidental offenders.

All this only implies that career offenders deserve a higher penalty, but to justify issuing such a penalty it must serve some consequentialist purpose.¹¹⁷ Whether a harder penalty for recidivists actually helps society is an empirical question, but it can also be analyzed theoretically based on some plausible assumptions. The following subparts will investigate the effects of the three-strikes-and-you're-out laws on incapacitation and deterrence. This analysis will take into account the cost of punishment, which allows for an analogy to Axelrod's tournaments of the repeated prisoner's dilemma.¹¹⁸

B. Incapacitating Career Offenders

The analogy to the repeated prisoner's dilemma is not perfect. The state and the criminal are not two symmetric opponents. It would be quite useless to model the strategic responses that criminals can implement against the far more powerful state. Nevertheless, the situation as far as the state is concerned does resemble a repeated prisoner's dilemma in some respects.

In a repeated prisoner's dilemma, it is beneficial to play cooperate against a friendly but responsive rival program and it is beneficial to play defect against a program that intentionally defects against you. In a noisy tournament, the problem is how to identify which programs are deliberately defecting and which played cooperate but were manipulated by the game-master.

The parallel between the repeated prisoner's dilemma and criminal law is that it is useful to treat an incidental offender as a friendly program and a career offender as an intentionally defecting program. It is beneficial to release incidental offenders from prison after a period that is long enough to sustain the regime of deterrence. Every extra day in prison costs taxpayers a lot of money for lodging, food, and security, and prevents a citizen from

116. *See id.* (suggesting that recidivists are not necessarily professional criminals).

117. *See id.* at 46.

118. *See supra* Part II.A.

working and contributing to society.¹¹⁹ In contrast, under some conditions, it may be useful to keep career offenders incarcerated for a much longer period in order to incapacitate them—to make it physically impossible for them to commit more crimes out of prison. The problem faced by the state is how to identify who is an incidental offender and who is a career offender so that it can incapacitate only the latter.

One of the justifications for the three-strikes-and-you're-out rule is that it can effectively incapacitate career offenders while avoiding excessive penalties for incidental offenders. If the rule works, a possibility which many empirical studies have tried to establish or refute, it can change the selection of prisoners and ensure that even with the same number of prisoners there will be a greater proportion of career offenders to incidental offenders behind bars.¹²⁰

Three-strikes-and-you're-out works exactly like a rule of many-tits-for-many-tats in this respect. The legal system requires several convictions to be convinced that someone is a career offender and mete out a very long sentence that would effectively incapacitate him from committing more crimes. Before several convictions are accumulated, the penalties will be lower and will not attempt to incapacitate criminals for long periods. By delaying the response of the state and gathering information about the type of the criminal, the efforts of incapacitation can be used more efficiently.

C. Improving Deterrence for Career Offenders

Punishing criminals by incarceration is expensive. The previous subpart suggested that the costs of imprisonment outweigh the benefits of incapacitation regarding incidental offenders. In contrast, incapacitation is more useful regarding career offenders and may actually outweigh the costs of imprisonment. Nevertheless, it is possible that keeping a man in prison for the rest of his life is more expensive than the harm he would cause to society on the loose, even if he is a career offender. Part of the reason for that is that crimes are usually committed by young people and the chances that someone will continue to commit crimes after a decade or so in prison are small.¹²¹

119 See Becker, *supra* note 44, at 180. For an up-to-date assessment of the costs of incarceration, see Eliza Mills, *How Much Does it Cost to Send Someone to Prison*, MARKETPLACE (May 19, 2017, 4:00 PM), <https://www.marketplace.org/2017/05/15/world/how-much-does-it-cost-send-someone-prison> [<https://perma.cc/NH4M-YV9A>] (archived Aug. 16, 2018).

120. See FRANKLIN E. ZIMRING, GORDON HAWKINS & SAM KAMIN, PUNISHMENT AND DEMOCRACY: THREE STRIKES AND YOU'RE OUT IN CALIFORNIA 92 (2001) (explaining the argument that three-strikes-and-you're out is useful to incapacitate specifically the most dangerous criminals, but providing evidence that incapacitation due to the three strikes rule did not cause the decrease in crime in California in the nineties).

121. See Shepherd, *supra* note 10, at 160.

Still, incarceration of career offenders may ultimately be beneficial because it can deter other criminals and thus assist in reducing crime. To determine whether three-strikes-and-you're-out laws are advantageous, the costs of implementing them must be weighed against the combined benefits of incapacitation and deterrence.

A common mistake made when analyzing the deterrent effect of three-strikes rules is to calculate only the deterrent effect of the third strike. But where only the third strike is concerned, three-strikes laws may actually have a detrimental effect on deterrence. Usually, a higher penalty deters more crimes, but there are situations in which the threat of a severe penalty can actually be counterproductive. The most common situation of that sort is the lack of so-called "marginal deterrence" caused by the threat of a severe penalty.¹²² For example, if the penalty for armed robbery with two previous strikes is a life sentence, more criminals would decide to kill their victims and thus reduce the chances of getting caught. When a criminal faces the maximum penalty for a crime he already committed, he cannot be deterred from committing even worse crimes that can help him escape from the law.

Scholars have argued that three-strikes-and-you're-out laws fail exactly because they reduce marginal deterrence.¹²³ Criminals who already have two strikes have an incentive to kill law enforcement officers, witnesses, or victims to reduce their chances of getting caught, thereby increasing the rate of homicides.¹²⁴ This suggests that if only the deterrence of the third strike is taken into account, three-strikes laws may actually lead to worse crimes.

But focusing only on the deterrence of criminals with two previous strikes ignores a crucial part of the picture. People who consider becoming career offenders must realize that every strike gets them closer to the third strike and makes a future life sentence a real possibility. Because they are career offenders, the possibility that they will be caught for future crimes must loom much larger for them than for incidental offenders. Empirical research suggests that this deters potential criminals from committing even their first or second crime.¹²⁵

122. There are other conditions in which a high penalty is counterproductive that are not so relevant here. See generally Saul Levmore & Ariel Porat, *Threats and Criminal Deterrence in Several Dimensions*, 2017 U. ILL. L. REV. 1333 (2017) (discussing the general effects of penalties on the credibility of threats and blackmailing); Uri Weiss, *The Robber Wants to Be Punished* (Hebrew Uni. of Jerusalem, Federman Ctr. for the Study of Rationality, Discussion Paper No. 685, 2015) (discussing the problem of making threats by a criminal to cause further harm credible because of the penalty he will suffer for the initial offense of issuing an illegal threat).

123. See Thomas B. Marvell & Carlisle E. Moody, *The Lethal Effects of Three Strikes Laws*, 30 J. LEGAL STUD. 89, 89–93 (2001) (arguing that three-strikes-and-you're-out laws decrease marginal deterrence and providing evidence that they increased homicides).

124. *Id.*

125. See Shepherd, *supra* note 10, at 162, 174.

The application of a many-tits-for-many-tats strategy therefore has a clear downside—a life penalty for the third strike can damage marginal deterrence and lead to more homicides. At the same time, three-strikes laws can prevent people from becoming career offenders by giving them an incentive to avoid even their first crime. Just like in the noisy tournaments described above, people know that the state observes their actions. Once the state is convinced they are career offenders, the penalty will be severe. Rational people will often be deterred and decide to avoid a life of crime.

The jury is still out on whether three-strikes laws prevent more crime through the combined mechanisms of incapacitation and deterrence.¹²⁶ Nevertheless, supporters of such laws can use the logic of many-tits-for-many-tats to back their position.

Observing the behavior of criminals over several strikes before subjecting them to a life sentence can both help incapacitate more career offenders and deter people from becoming career offenders. In contrast, the strategy of tit-for-tat—a proportional penalty for every offense—will not distinguish between career offenders and incidental offenders and therefore will likely do worse in terms of both deterrence and incapacitation of career offenders.

V. DELAYED RESPONSES IN INTERNATIONAL SALES LAW

Many-tits-for-many-tats is often used by individuals against each other without the need for a special law or even for a contract.¹²⁷ When a lobsterman sets traps in the territory of his neighbor, he is usually warned that his actions violate the norms of the community.¹²⁸ If warnings do not help and the violations of territoriality persist, a neighboring lobsterman will inflict disproportional damage on the transgressor by destroying some of his lobster traps.¹²⁹ Note that the punishing neighbor would not

126. There are many different views on whether better deterrence is reached when repeat offenders are punished more severely. See Harel & Porat, *supra* note 90, at 289–90 (providing numerous references to literature on the question). There are also studies directed specifically at the deterrent effect of three-strikes laws. See, e.g., Helland & Tabarrok, *supra* note 10 (comparing the arrests of people who were released from prison in California in 1994 with two “strikes” to those released with two trials for strikable offenses but only one conviction that constitutes a strike; finding that the third strike provisions reduced arrests for criminals with two strikes by 17 to 20 percent); Cassandra K. Crifasi et al., *Effects of State-Level Policy Changes on Homicide and Nonfatal Shootings of Law Enforcement Officers*, 22 *INJURY PREVENTION* 274, 276 (2016) (finding that three-strikes laws were correlated with a 33 percent increase in fatal assaults of law enforcement officers).

127. See ROBERT C. ELLICKSON, *ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES* 218–19 (1991).

128. *Id.*

129. *Id.*

just take away traps or lobsters—these actions are profitable for the punisher and can therefore be interpreted as an act of self-interest instead of a deliberately inflicted sanction.¹³⁰ Instead, the neighbor would cause great damage in a way that sends a clear message.¹³¹

Scholars have noted that a similar pattern of warning, waiting, and finally inflicting disproportional damage on transgressors appears in numerous community settings.¹³² This pattern ensures that only intentional transgressions will be punished and also that the punishment will be understood as a deliberate sanction.

When two parties sign a contract, they create a special relationship which resembles a repeated prisoner's dilemma. In each round of the game, the seller has an incentive to provide cheaper and inferior goods and the buyer has an incentive not to pay fully and on time. But both the seller and the buyer have to care about the future. If they cheat the other party and get caught, that party may respond by cheating them in return, damaging their good name in the industry by bad gossip, or turning to legal sanctions. A tit-for-tat strategy would be useful to ensure optimal cooperation between contractors who can fully observe each other's conduct.

But just like in a noisy tournament, sometimes breaches of the contract are not intentional. Sometimes, the seller did not know that the goods were defective or they were damaged during transit.¹³³ At other times, a buyer suffered from an unexpected cash-flow problem and was unable to pay at the agreed-upon date.¹³⁴ Contractors who want to continue their fruitful collaboration should not retaliate against unintentional and unavoidable infringements. However, simply ignoring previous infringements would also be a bad strategy as it would allow the other party to take advantage of one's generosity.

The strategy required is many-tits-for-many-tats: studying the behavior of the other party and only when it is established that the cheating is intentional, responding disproportionately. The following subparts suggest first that contractors actually follow this strategy and explain how the law can avoid interfering with their ability to do so. Later, the CISG general strategy of tit-for-tat responses for breaches of contract is described. An exception to that strategy, the Nachfrist Notice procedure used in the CISG, is

130. *Id.*

131. *Id.* (describing the pattern of a fisherman's gradual escalation of force).

132. *See id.* at 217–19 (mentioning the example of cattle farmers in Shasta County and referring to several other examples).

133. *See* Lisa Bernstein, *Private Commercial Law in the Cotton Industry: Creating Cooperation Through Rules, Norms, and Institutions*, 99 MICH. L. REV. 1724, 1775 (2001) [hereinafter Bernstein *Private Commercial Law*].

134. *See* Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code's Search for Immanent Business Norms*, 144 U. PA. L. REV. 1765, 1808 (1996) [hereinafter Bernstein *Merchant Law*].

explained as an attempt to institutionalize a many-tits-for-many-tats strategy for conditions of uncertainty.

A. *Non-Legal Sanctions in Contractual Relations*

In some lines of business, the chances of inadvertent breach are high even when the proper precautions have been implemented. When the product can be easily damaged during storage or transportation, it is difficult to discern whether the seller provided a defective product intentionally or not. Scholars have argued that the cotton industry is such a market.¹³⁵

Buyers in the cotton industry find themselves in a situation which resembles a noisy tournament: they cannot know for sure if the seller intended to defect, or if the goods were damaged against the seller's will. A game theoretical analysis would recommend a strategy of many-tits-for-many-tats in situations of this kind. Instead of responding immediately by ending the business relationship or using negative gossip against the seller, the buyer should wait and observe several shipments until it is convinced that the seller deliberately provides defective goods. Then the buyer should respond with especially harmful gossip.

Scholars have suggested that business practices concur with this strategic analysis. Buyers are often willing to forgive several breaches without retaliation.¹³⁶ Eventually, when buyers are convinced that the breaches are intentional, they can gossip against the sellers in the business community. By issuing well-substantiated gossip that records several breaches, the harm caused to the reputation of the seller is much higher than if the gossip addressed a single violation.¹³⁷ Furthermore, the buyer has to shoulder the costs of issuing such gossip only once instead of several times.¹³⁸

The strategy of many-tits-for-many-tats is applied by contractors without the need for judicial intervention. In fact, some courts that view the concessions of contractors as a business norm, which changes the parties' actual contractual obligations,¹³⁹ may be causing more harm than good. Scholars have demonstrated that contractors are willing to ignore several breaches because they trust each other and want to continue the business relationship.¹⁴⁰ Forcing contractors who compromised in the past to systematically overlook all future breaches or to accept breaches even when the

135. See Bernstein *Private Commercial Law*, *supra* note 133, at 1775.

136. See *id.* at 1776.

137. See *id.* at 1777–79.

138. See *id.*

139. The attempt to change the parties' obligations according to existing business norms underlines, for example, Article 2 of the Uniform Commercial Code. See Bernstein *Merchant Law*, *supra* note 134, at 1766.

140. Bernstein *Private Commercial Law*, *supra* note 133, at 1776–77.

business relationship ended badly would change their incentives and devastate the ability of contractors to cooperate.¹⁴¹ Parties would be less likely to let small breaches go without a sanction if a court can later hold them liable for similar generosity in all future interactions.¹⁴²

B. *Tit-for-Tat under the CISG*

The previous subpart demonstrates that forcing parties by law to forgive violations just because they did so in the past is a crude and potentially harmful strategy. Courts often do not possess the information that is held by the parties and that guides their strategic responses. They therefore cannot strategize instead of the parties to the contract.¹⁴³ However, this does not mean that the law cannot provide rules that would facilitate the use of many-tits-for-many-tats by contractors. The Nachfrist Notice procedure in the CISG discussed in the next subpart is such a rule. But this procedure is an exception to the general regime of the CISG that promotes a tit-for-tat strategy, a strategy that is efficient under conditions of certainty.

The CISG—the United Nations Convention on Contracts for the International Sale of Goods—is an international treaty designed to introduce a uniform regime that regulates the international sale of goods.¹⁴⁴ International sales sometimes provide excellent opportunities, but they are fraught with special challenges. Parties must overcome legal differences across jurisdictions in addition to differences of business culture and language.¹⁴⁵ By creating a uniform contractual regime that applies between all parties from countries that ratified the CISG,¹⁴⁶ the ability of the parties to predict the rules that will be applied to them is significantly improved. Predictability increases the ability of the parties to conclude efficient international deals.¹⁴⁷

141. See Bernstein *Merchant Law*, *supra* note 134 at 1803–04.

142. See Lisa Bernstein, *Custom in the Courts*, 110 NW. U. L. REV. 63, 90–92 (2015).

143. See Bernstein *Merchant Law*, *supra* note 134, at 1803–04; Bernstein *Private Commercial Law*, *supra* note 133, at 1776–77.

144. See CISG, *supra* note 13, art. 7(1).

145. See JOSEPH F. MORRISSEY & JACK M. GRAVES, INTERNATIONAL SALES LAW AND ARBITRATION: PROBLEMS, CASES, AND COMMENTARY 29–45 (2008) (describing these and other challenges that arise especially in international sales).

146. See CISG, *supra* note 13, art. 1(1)(a) (stating that the CISG will apply if both parties come from countries that ratified the CISG). See also *id.* art. 1(1)(b) (stating that the CISG will apply if the rules of private international law lead to the application of the laws of a country that ratified the CISG, unless that country opted out of this source of jurisdiction when it ratified the CISG).

147. See BRUNO ZELLER, CISG AND THE UNIFICATION OF INTERNATIONAL TRADE LAW 27–28 (2007) (discussing the certainty that CISG offers as a uniform law).

The CISG is committed to saving contracts in order to salvage the gains that both parties make from trade.¹⁴⁸ That is why a limited breach of the contract by the seller does not automatically grant the buyer the right to avoid the contract. Instead, the buyer can exercise a series of milder sanctions that resemble a tit-for-tat strategy.

If the seller delivers nonconforming goods, for example, the CISG allows the buyer to reduce the price only proportionately to the difference between the value of the goods actually delivered and the value that conforming goods would have had at that time.¹⁴⁹ In this way, the financial damage that the buyer can cause the seller equals exactly the damage that the seller caused the buyer. The same rule of proportional price reduction applies if the seller delivers only a part of the goods.¹⁵⁰

Most importantly, both parties to the contract can sue for damages that equal all the losses caused to them by a breach of contract by the other side. The damages may not exceed the loss that the breaching party foresaw or ought to have foreseen when the contract was concluded.¹⁵¹ The tool of suing for damages allows both parties to retaliate proportionately, requiring the other side to pay exactly the losses it intentionally or negligently caused by the breach.

If the violation committed by a contractor is extreme, it may constitute a fundamental breach. A breach is considered fundamental if it substantially deprives a contractor of what it is entitled to expect under the contract, unless the breaching party did not foresee this result and a reasonable person would not have foreseen it.¹⁵² A fundamental breach essentially eliminates all the gains that a party expected to get from the contract. If a party commits a fundamental breach, the other party is entitled to avoid the contract.¹⁵³ This is a proportional response—the breaching party destroyed all gains for the other party by a fundamental breach so that party gets to destroy all the gains of the breaching party from the deal. The tit-for-tat strategy is clearly manifested in the additional rule that if a party committed a fundamental breach regarding a specific installment, the other party may declare the contract avoided regarding that installment.¹⁵⁴

The use of tit-for-tat by the CISG is efficient under conditions of certainty. When both parties are aware of each other's actions, a

148. See Peter Huber, *CISG—The Structure of Remedies*, 71 RABEL J. COMP. INT'L PRIVATE L. 13, 28 (2007).

149. See CISG, *supra* note 13, art. 50.

150. See *id.* art. 51.

151. See *id.* art. 74.

152. See *id.* art. 25.

153. See *id.* arts. 49(1)(a), 64; see also *id.* art. 72(1) (stating that if it is clear that a party will commit a fundamental breach prior to the date of performance, the other party may avoid the contract).

154. See *id.* art. 73(1).

proportional response can deter contractors from committing violations and save as much as possible of the gains from trade.

C. *The Nachfrist Notice Procedure*

The Nachfrist Notice rule, in contrast, is designed to deal with conditions of uncertainty. This rule allows the buyer who faces a seller that did not deliver on time to set an additional period of reasonable time by which the seller must perform. If the seller does not perform within the additional period fixed by the buyer, the buyer may declare the contract avoided.¹⁵⁵

This rule resembles a rule of many-tits-for-many-tats. The response of avoiding the contract by the buyer is not immediate—the seller gets extra time in which it can perform the contract. The response is also not proportional because the contract is avoided even if the breach is not fundamental. Usually, a delayed delivery does not by itself constitute a fundamental breach.¹⁵⁶ Avoiding the contract would destroy all the gains of the seller from the deal.

The Nachfrist Notice rule of many-tits-for-many-tats is ideal for conditions of uncertainty. Imagine that you are a buyer that bought some heavy equipment for your factory. The seller was supposed to deliver the equipment three days ago but did not. Every day of delay costs money, and the seller does not answer your calls. Your losses may start mounting soon as without the equipment you cannot honor your own commitments to customers. You have no idea if the seller intends to comply eventually and, if so, when. Issuing a Nachfrist Notice allows you to deal with this uncertainty. Within the reasonable time that you set, you will either receive the equipment you ordered or get the right to avoid the contract.¹⁵⁷

To sum up, a contractual relationship often looks a lot like a repeated prisoner's dilemma. In light of that, a tit-for-tat strategy can be used to maximize cooperation in contracts and constitutes the main regime adopted by the CISG. However, in situations of particular uncertainty, a tit-for-tat strategy can lead to too many mistakes. Merchants facing uncertainty because of potentially unintentional damage to goods sometimes react by adopting a strategy of many-tits-for-many-tats. The Nachfrist Notice procedure in the CISG is also a form of many-tits-for-many-tats that can be used in conditions of uncertainty.

155. See *id.* art. 49(1)(b), 47(1).

156. See MORRISSEY & GRAVES, *supra* note 145, at 227 (saying Article 47 provides a way for the buyer to limit late deliveries by the seller but does not typically allow the buyer to declare the contract voided if there is late delivery).

157. See Ericson P. Kimbel, *Nachfrist Notice and Avoidance Under the CISG*, 18 J.L. & COM. 301, 301–03 (1999) (describing such a scenario and highlighting the role of the Nachfrist Notice in providing certainty and predictability).

VI. CONCLUSION

The path of the law is wiser than the transient people who walk it. The laws of war, criminal law, and international sales law have this in common: they all developed over decades by legislators, judges, and other lawyers who were trying to promote cooperation and deter wrongdoing. It is little wonder that all these fields exhibit doctrines that track the fundamental insights of game theory.

Under conditions of certainty, a tit-for-tat strategy is conducive to promoting cooperation. By allowing immediate and proportional responses, tit-for-tat effectively deters attempts to exploit others. This is why tit-for-tat strategies are so pervasive in the law and proportionality became an almost sacred principle traversing all areas of both private and public law.¹⁵⁸

But when certainty breaks down because the actual actions and intentions of others are not easily observable, tit-for-tat fails. It can lead to mistaken retaliations and sometimes provoke endless waves of counterreprisals. The strategy of many-tits-for-many-tats delays the response to transgressions until the true intentions of the transgressor are exposed. To maintain deterrence, many-tits-for-many-tats then recommends a disproportionate response. This strategy is manifested in several doctrines of the laws of war, criminal law, and international sales law that address conditions of pervasive uncertainty.

Legal doctrine acquired the wisdom of strategically supporting cooperation over time by addressing specific circumstances. It would be foolish to ignore the insights acquired through generations of experience. But the conditions that the law seeks to address never rest. They change all the time. To keep up with changes and learn how to properly address them, a deeper understanding of the logic behind the law is required.¹⁵⁹ Such a deeper understanding is the purpose of this Article.

158. See TADROS, *supra* note 3, at 36.

159. See Oliver Wendell Holmes, *The Path of the Law*, 110 HARV. L. REV. 991, 1001 (1997).