BILATERAL BREAKDOWN: PREDICTING THE THUCYDIDES TRAP WITH BOOLEAN ALGEBRA AND THREE-PLAYER DECISION GAMES

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<u>Abstract</u>

While interstate relations need not yield crisis, the power transition between hegemonicdecline and rising revisionism destabilizes the system since both units covet equal recognition despite the risk of war. The risk or war, in turn, further increases by overlapping spheres of influence from third-party issues or influences that undermine stability as The Thucydides Trap somewhat suggests with several case-studies. Several case-studies, however, always stop short of full disclosure to accurately forecast crisis that formal modeling otherwise resolves because boolean algebra can establish the fourfold criteria across 22 categories necessary for such determination. Such determination, consequently, avails two possible versions of three-player decision games so modeled as proxy compliance or protégé deterrence over "challenger" and "defender" under the status-quo not always unstable unless third-parties provoke one side against the other such that neither can backdown without jeopardizing reputation since "loss aversion" supercedes "expected utility" despite incomplete information amid simultaneous Perfect Bayesian Equilibria. Perfect Bayesian Equilibria—settlement, separation, standby, sucker—express the four possibilities ordinally in which each outcome realizes greater escalation or diminishes reputation unto the point of unavoidable conflict. In the end, what begins with the power-transition amid third-party obligation means the real possibility for bilateral breakdown.

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The Thucydides Trap teaches that bilateralism between satisfied states and revisionist regimes almost always results in conflict due to the power-transition. The power-transition—between the rise and fall of units that structure the system—compels the dominant to prevent displacement or rather replacement through military preemption just as "dynamic differentials" predicts. "Dynamic Differentials" (Copeland 2001) predicts that decreased disparities in relative capabilities between hegemonic rivals increases the likelihood for conflict. The likelihood for conflict, though, leaves open the possibility over whether the dominant or rising power strikes first under closure of risk and uncertainty. Risk and uncertainty either way, simply complicates the nature of war let alone socialized peace through coexistence to prevent The Thucydides Trap.

To prevent The Thucydides Trap, Destined for War outlines 12 clues for Peace that begins with the ends of "Higher authorities" (Allison 2017:190-191) through supranational means. Through supranational means, immersion in international organizations renders conflict almost impossible against any power-transition so long as dominant revisionist accept mutual accountability unto the embedded. The embedded—economic, political, and security that constrain behaviors—essentially iterates interdependence by personal preferences from "Wily" statesmen (Allison 2017:194-198). Statesmen, supposedly, personalize bilateral belligerence in ways that clarify interests and intentions indicating what each side covets whether on the rise or toward decline unto somewhere in between. Somewhere in between-through the point at which the power-transition equalizes amid near parity-makes "Timing" (Allison 2017:198-200) essential for war or peace since opportunities to strike versus settle open and close rather quickly with no predictable consummation let alone perceptive commencement either way. Either way, cultural commonalities constrain conflict amid any bilateral belligerence just as The Manchester School unto "The Peace" however dictatorial or democratic argues alongside what The Clash of Civilizations (Huntington 1996) ironically suggests. What The Clash of Civilization ironically suggests thus iterates that states sharing similar backgrounds render configurations between civic and ethnic irrelevant since such combinations temper temptations for control or conquest despite despotic differences amid expected utility. Expected utility-so synonymous with relative gains playing out in zerosum terms to condition absolute losses-breaks bilateral belligerence because expansion both big and small disrupts the balance of power already untrustworthy let alone stable unless rivals realize rational restraint as MAD. MAD-Mutual Assured Destruction-in which two adversaries each possess the power to inflict devastating blows compels compliance by double-deterrence since any damage however absolute or relative from the first-strike cannot prevent reciprocal retaliation through secondary responses endemic of massive-military-capacity. Massive-military-capacity-between rivals immersed in the power-transition-makes "Hot War no longer...justifiable" (Allison 2017:208) despite the unavoidable propensity for outright confrontation that neither side knowingly can win since the associated costs of deterrence requires continuous "balance" to avoid conflict and maintain reluctant coexistence. Reluctant coexistence, consequently, conditions the terms for further cooperation through interdependence over need whether political or economic under circumstances that necessitate enough entrustment between both sides through vested interests to survive intact without direct confrontation (Allison 2017:210).

Direct confrontation, however, might also result due to obligations outside immediate interactions through alignment with other states which make "Alliances prove fatal" (Allison 2017:211) as *Theory of International Politics* rightfully suspects since "allies add...little" (Waltz 1979:171) amid so much liability already. Already, the hegemonic-rivalry literally attributable to *The Rise and Fall of The Great Powers* (Kennedy 1989) incurs the associated costs of defense such that "Domestic Performance" or output must sustain "Economic Growth" so integral with any success amid *Destined For War*.

Any success amid *Destined For War*—that starts at Iberian infighting over international trade worldwide with Anglo-American hemispheric-hegemony under the contested sphere of influence—thus tempers the power-transition through cultural commonalities however ethnic or civic. However ethnic or civic, cultural commonalities cannot counteract hegemonic-rivalries that only recognized reciprocity by treaty rights establishes from international law. International law, incidentally, institutes irony since signing treaties makes members susceptible accountability and accusations that justifies the use of force between retaliation versus preemption as almost all cases demonstrate throughout *Destined For War*.

Throughout Destined For War, 16 cases establish what condones or condemns justifiable conflict between hegemonic-rivals already aware of the power-transition that historically begins in the 15th century with Iberia onward unto current China-US Relations. Current China-US Relations—in constant flux amid good graces and bad behavior—arguably typifies the 17th case that Destined For War suggests without supplementation beyond immediate commentary on the current history of foreign affairs relative to geopolitics between regional rivals versus global goliaths as the common distinction worth noting. Worth noting, not every conflict within Destined For War involves worldwide domination despite dualistic consistency attributable to the power-transition that ironically neglects polarity. Polarity-uni, bi, tri, multi-expressing the number of effective units that structure the system concentrates great power politics around the world rather than the region even though continents or oceans oddly establish epicenters and flashpoints as Destined For War identifies without clarification. Without clarification, Destined For War connotes continental conflicts coterminously with regional rivalries that sometimes globalize goals relative to powerprojection between land or sea. Between land or sea, army and naval capabilities covered throughout The 16 Cases in Destined For War warrant reconfiguration to organize accordingly. Accordingly, Destined For War outlines 16 cases to establish historical examples of the power-transition that reveal right descriptions with wrong depiction through tabulation. Through tabulation, Destined For War chronologically lists the 16 cases of the power-transition only to disregard distinctions between polarity and power let alone synchronize or synthesize what motivates major moves against the system with any real consistency. Real consistency ideally requires reconfiguration by Boolean Algebra from quantitative-comparative-analysis.

Quantitative-Comparative-Analysis

"Qualitative comparative analysis...satisfies...the twin ideas of *necessity* and *sufficiency*... omitted...in...statistical methods..." (Grofman and Schneider 2009: 662-663) by Binary Logistic Regression from quantitative-imperatives rather than building atop "an interval or ratio" through

Boolean Algebra calculated so quadruply. Quadruply—raw data, truth tables, solution formulas, measures of fit—the methodological gap between traditional case-studies versus statistical testing now abridges then builds the fundamental framework necessary for "An Introduction to Crisp Set QCA." For "An Introduction to Crisp Set QCA" (Grofman and Schneider 2009) generally specifies 16 cases across four categories of variables by which various combinations from input interaction describes or determines what predictable outcome emerges. What predictable outcome emerges, however, retains relevance insofar as combinations between variables actually yield observable objectives beyond Boolean Analysis through supplement subjective case-studies that *Destined For War* intends.

Destined For War intends to recount the rise and fall of great powers by inducing qualitative structure from historical content rather than deduced quantitative analysis that the positivist context warrants with empirical methods already apparent at the start across other disclosures in the end. In the end, Destined For War accepts the criticisms concerning the inability to test the power-transition empirically without any alternative. Any alternative—that structures analysis amid qualitative and quantitative methods—precisely predicts what truth tables tabulate through Boolean Algebra. Through Boolean Algebra, qualitative-comparative analysis (Grofman and Schneider 2009) covers the same 16 cases of Destined For War differently amid key variables relevant to the power-transition. To the power-transition—multipolarity, proximity, seaworthy, hegemony—comprise common variables throughout every case-study within Destined For War that historically makes or breaks global conflict either way. Either way, global conflict rather than regional control centers this principal point through tangential torrents at the future to which Destined For War historically revolves right now over The US and China under the power-transition.

The power-transition, that predates present relations between The US and China, reveals remarkable realities concerning stability since 11 cases of open hostilities succumbs to what defines multipolarity under three or more powers in conflict over the system as necessarily global rather than always regional despite proximity. Proximity—in which two states rather than sides vie for control of the system—need not typify global all the time despite the rather frequent regional concentration whether continental or oceanic. Oceanic, though, typifies much of what Destined For War attributes to open hostilities as seaworthy. Seaworthy-in which major states or sides deploy massive naval force to control the system-becomes mutually inclusive of global and regional concentrations inherent in hegemony. Hegemony-The concentration of power vested in one single state with the capability to defeat potential rivals while simultaneously assuring accessible markets and finance through trade-routes or credit-lines-globalizes the power-transition beyond immediate regionalism that almost always typifies the epicenter. The epicenter, or origin, to which the power-transition revolves realistically centers the geopolitics of conflict. Conflict-the deliberate outbreak of open hostilities between two states that mutually strive to conquer and control the system-conceptualizes consequence over what makes or breaks Destined For War under correct categorization already apparent. Already apparent, Destined for War requires revision by Boolean Algebra from "truth tables" to determine what causes conflict amid an almost all or nothing notation. All or nothing notation avails the desirable qualitative-comparative-analysis necessary to comprehensively structure Destined For War through path-dependence with consecutive correlates instead of intermittent inputs. Intermittent inputs unto partial parings either establish descriptive differences or simulate similarities that both break and make Destined For War through requisition.

Through requisition, the necessity or nonexistence of Multipolarity immediately imperils what yields conflict since nearly every hegemonic-rivalry in the power-transition involves two sides rather than two states so contrary to "dynamic differentials" (Copeland 1996) by suggesting static similarity (Honda 2013) from other actors and factors. Actors and factors, however, simply sequence complex combinations that render relations almost impossible to fathom such as Multipolarity beside or without similar differences that establishes the next step through proximity. Proximity-interests, influences, shared borders, adversarial alliances-consequently cannot determine Destined For War irrespective of existence or interaction with any other input such as seaworthy. Seaworthy, also not contingent, thus proves indeterminate unless all previous inputs exist and interact ahead of clear contestation between the two top states in the system that vie for hegemony through terms or conditions fourfold. Fourfold-Multipolarity, Proximity, Seaworthy, Hegemony-literally makes Destined For War reality through open hostilities. Open hostilities or the lack thereof describes 22 categories-Nonexistence, Continental, Hegemony, Unipolar, Oceanic, Inevitability, Civilizational, Territorial, Trading, Multipolarity, Seaworthy, Militarism, Disconnection, Disarray, Moderation, Hierarchical, Implosion, Anarchical, Tripolar, Conflict-in no set sequence amid binary combinations that simply complicate proper placement since several cases predate and transcend immediate intent to demonstrate bilateral breakdown (See Table 1).

	M^1	\mathbf{P}^2	S ³	H^4	B^5		
Nonexistence	0	0	0	0	0	High to Late Middle Ages in Europe [c. 1000 - 1492]	
Continental	1	1	0	1	0	Hundred Year's Peace [1815-1914] with British Hegemony	
Hegemony	0	0	0	1	0	Roman Zenith [c. 116]	
Unipolar	0	0	1	1	0	Spanish Empire [c. 1530]	
Oceanic	1	1	1	0	1	Pacific War between US and Japan [1941-1945]	
Inevitability	1	1	1	1	1	US-China Relations in the near future	
Civilizational	1	0	1	1	1	The Clash with Islam [1998 - Present]	
Territorial	1	1	0	0	0	Land Power Across The Geographical Pivot	
Trading State	1	0	1	0	0	Maritime Might Across The Insular Crescent	
Extreme	1	0	0	0	1	Revolutions of 1848	
Dualistic	1	0	0	1	1	Anglo-German Rivalry in Europe during Both World Wars	
Multipolarity	1	0	0	0	0	Treaty of Westphalia [1648]	
Seaworthy	0	0	1	0	0	Portuguese Explorations [1415-1488]	

Table 1. Data Matrix of Four Inputs to Determine Conflict in The Power-Transition

Militarism	1	1	0	1	1	Russo-German Relations in Europe during Both World Wars	
Disconnection	1	0	0	1	0	Carolingian Empire [c. 800-888]	
Disarray	1	1	1	0	0	Spanish Hapsburg Decline and Dutch East India Company [1588-1602]	
Moderation	0	1	1	1	0	US-Soviet Cold War with American Hegemony	
Hierarchical	1	1	1	1	0	Post-Cold War Anglo-American Special Relationship [c. 1992]	
Implosion	0	0	0	1	1	Dutch Revolt against Spanish Hapsburgs [1573]; Iranian Revolution [1978-1979]; Sandinistas [1979]	
Anarchical	0	1	1	1	1	[Peloponnesian War 431 BC - 404 BC; Punic Wars 246 BC - 146 BC; Great Italian Wars 1494-1559]	
Tripolar	0	0	1	1	1	Postwar "Big Three" Countries [1945-1947]	
Conflict	0	0	0	0	1	Mongolian Invasion of Europe [Mid-13 to 14 Centuries], War on Terror [2002 - Present]	

1. Multipolaity = Necessarily Global, and not Regional, in which three or more powers vie for control of the system.

2. Proximity = Not Necessarily Global, though often Regional, in which two states rather than sides with similar differences over shared borders or interests and influence vie for control under the system.

3. Seaworthy = Mutually inclusive of Global and Regional, in which major states or sides deploy mass naval force to control the system.

Hegemony = The concentration of power vested in one single state with the capability to defeat potential rivals while simultaneously assuring
accessible markets and finance through trade or loans.

5. Bilateral Breakdown = The deliberate outbreak of open hostilities between two sides or states that strive to conquer and consume the other in order to control the system.

Bilateral Breakdown begins at Nonexistence with 0s across all categories by denoting multiple actors from factors that render "the state" beside Multipolarity and Proximity impossible so neither Sea Power nor Hegemony ever emerges let alone actuate Conflict just as the High to Late Middle Ages in Europe establishes ahead of Continental. Continental, consequently, covers consecutive inputs including Multipolarity and Proximity describes the Hundred Year's Peace with British Hegemony. Hegemony, in general, literally specifies the concept that denotes just one category characterized by historical analogy from The Roman Zenith as an archetypical intercontinental regime over other latent developments under unipolar. Unipolar, in turn, yields just two inputs of Sea Power and Hegemony that describes the Spanish Empire without Conflict unlike Oceanic. Oceanic comes the closest without going the distance, so to speak, across four categories except for hegemony conditioned in regional rather than global terms attributable to great power politics such as The Pacific War between The US and Japan which precludes Inevitability. Inevitability in turn reveals the best terms amid the worst conditions imaginable inherent throughout Destined for War by predicting the future of US-China Relations apart from solely Civilizational. Civilizational in contrast includes inputs across all categories expect for Proximity that describes The Clash with Islam as something not always Territorial. Territorial, though, takes the given Hegemony out of Continental that the first two inputs loosely coalesce through land power across the Geographical Pivot against strict trading. Trading thus truncates the exact opposite of Territorial through only Multipolarity and Seaworthy to geopolitically express maritime might across the Insular Crescent on the outer rims moderating Extreme. Extreme literally lists the first and last inputs over Multipolarity alongside Conflict without anything in the middle under The Revolutions of 1848 that almost analogizes preconditions for Dualistic. Dualistic, as somewhat related, includes Hegemony beyond immediate inputs attributable to Extreme that now then describes Anglo-German Rivalry during both World Wars so historic and structural of Multipolarity. Multipolarity, alone however, predates possible classifications available through The Treaty of Westphalia between the latemedieval to early modern epoch expressing capabilities by distribution or concentration from military might more on land and less offshore otherwise inherent in Seaworthy. Seaworthy situates exact expressions that term conditions of naval navigation without anything else so simply hard to fathom from historical examples except for ways and means through Portugese Explorations by initiated ends at mercantilism rather than militarism. Militarism thus expresses the exact opposite to Seaworthy with inputs across all remnant categories which historically describes Russo-German Relations in Europe during Both World Wars against any Disconnection. Disconnection covers only two categories rather intermittently between Multipolarity and Hegemony that describes the Carolingian Empire amid other state-societies on or around The Continent not in Disarray.

Disarray, however, does describe the first three categories consecutively without the remnant two that thus describes Spanish Hapsburg Decline amid The Dutch East India Company against Moderation. Moderation expresses exact opposites to Extreme by all consecutive inner inputs apart from both exterior categories that historically analogizes The US-Soviet Cold War amid American Hegemony almost Hierarchical. Hierarchical adds the first input ahead of the remnant three without Conflict to describe the Post-Cold War Anglo-American Special Relationship that prevents and insulates Implosion. Implosion inverts Disarray by the last two categories apart from the first three inputs in which Hegemony coexists with Conflict to describes such events as The Dutch Revolt or more recent Iranian Revolution and Sandinistas concurrently against scenarios of Anarchical. Anarchical omits one input at the start while continuing consecutive categories to the end that realistically expresses the Peloponnesian War and Punic Wars beside the early modern Italian Wars almost inline with what configures Tripolar. Tripolar retains and removes the first two inputs amid consecutive concurrence across the final three categories to analogize The Postwar "Big Three" Countries through coexistence without Conflict. Conflict just defines that very concept comparable to Mongolian Invasions of Europe with the more contemporary War on Terror as archetypical examples. As archetypical examples, what the Data Matrix reveals truly lies in input interaction or lack thereof to qualitatively analyze the data matrix through sufficient comparison. Comparison, though, requires reconfiguration to establish the truth table that determines Bilateral Breakdown with four origins and outcomes (See Table 2).

		Origins			Outcomes	_	
Categories	М	Р	S	Н	В	n	Cases
Nonexistence	0	0	0	0	0	1	High to Late Middle Ages in Europe [c. 1000 - 1492]

 Table 2. Truth Table to Determine Bilateral Breakdown with Four Origins and Outcomes

Continental	1	1	0	1	0	1	Hundred Year's Peace [1815-1914] with British Hegemony	
Hegemony	0	0	0	1	0	1	Roman Zenith [c. 116]	
Unipolar	0	0	1	1	0	1	Spanish Empire [c. 1530]	
Oceanic	1	1	1	0	1	1	Pacific War between US and Japan [1941- 1945]	
Inevitability	1	1	1	1	1	1	US-China Relations in the near future	
Civilizational	1	0	1	1	1	1	The Clash with Islam [1998 - Present]	
Territorial	1	1	0	0	0	1	Land Power Across The Geographical Pivot	
Trading State	1	0	1	0	0	1	Maritime Might Across The Insular Crescent	
Extreme	1	0	0	0	1	1	Revolutions of 1848	
Dualistic	1	0	0	1	1	2	Anglo-German Rivalry in Europe during Both World Wars	
Multipolarity	1	0	0	0	0	1	Treaty of Westphalia [1648]	
Seaworthy	0	0	1	0	0	1	Portuguese Explorations [1415-1488]	
Militarism	1	1	0	1	1	2	Russo-German Relations in Europe during Both World Wars	
Disconnection	1	0	0	1	0	1	Carolingian Empire [c. 800-888]	
Disarray	1	1	1	0	0	2	Spanish Hapsburg Decline and Dutch East India Company [1588-1602]	
Moderation	0	1	1	1	0	1	US-Soviet Cold War with American Hegemony	
Hierarchical	1	1	1	1	0	1	Post-Cold War Anglo-American Special Relationship [c. 1992]	
Implosion	0	0	0	1	1	3	Dutch Revolt against Spanish Hapsburgs [1573]; Iranian Revolution [1978-1979]; Sandinistas [1979]	
Anarchical	0	1	1	1	1	3	[Peloponnesian War 431 BC - 404 BC; Punic Wars 246 BC - 146 BC; Great Italian Wars 1494-1559]	
Tripolar	0	0	1	1	1	3	Postwar "Big Three" Countries [1945-1947]	
Conflict	0	0	0	0	1	3	Mongolian Invasion of Europe [Mid-13 to 14 Centuries], War on Terror [2002 - Present]	

With four origins and outcomes, the raw data in truth table must now smooth out by reprocessing details from design through Boolean Operators. Boolean operators—OR (+), AND (*), NOT (-)-definitively demonstrates diffuse logic of a crisp set that also requires desirable dichotomous relationships by smoothing out the constant structure in intermittent Boolean operators (OR, AND, NOT) apart from binary statics (0,1) between the most obscure cases with the least obtrusive categories to express exact opposite. Exact opposites-with just two inputs rather all four -involving Multipolarity (M) beside Proximity (P) necessitate negation to posit correspondent calculations by subtracting additives from 1 which establishes minimum versus maximum values across case classification. Case classification that demonstrates Multipolarity (M) AND Proximity (P) calculates the minimum between two sets, since $M^*P = \min(M, P) = \min(0, 1)$, while OR yields the maximum through M + P = max(M, P) = max(0,1), where M = 1 as P = 1, when M + P = 1 =1 + 1 algebraically. Algebraically, all three basic Boolean operators express any logical framework through binary terms that condition subsequent outcomes with sufficient conditions amid AND versus OR unto NOT so written. So written, specified solutions generalize problems of Bilateral Breakdown through the previous four inputs split between the three Boolean operations across two binary statics to extrapolate inference. Inference induces thus the formula MPSH + MPSh + mPSH \rightarrow B to indicate that leftward inputs imply sufficient conditions for right outcomes where OR extrapolates three different means at the same end because AND initiates combined variables rather than isolation with negation by NOT from logical elimination. Elimination literally yields the solution to the problem of Bilateral Breakdown through terms and conditions across four inputs by which MPS + PSH \rightarrow B establishes equation PS(M+S) \rightarrow B from substitution. Substitution, though, remains digressed since four inputs must sequentially exist amid partial placement (M, P) unto ultimate dependence (S) determining Bilateral Breakdown (B) through Hegemony (H) that defies traditional Boolean Analysis with modification. Modification enables qualitative comparisons to quantify every input consecutively against episodic constants that indicate rather than initiate ends and means through the appearance of capital case-sensitive letterings, for example. For example, if Y represents the dependent variable juxtaposed to four independents A, B, C, D respectively, any one meets the criteria since (A + B + C + D = Y) marking "consistency." "Consistency," however, also digresses the number of cases that demonstrate sufficient condition X by remaining absolutely relative to outcome Y where higher values indicate closer correlation as the optimal expression so maximized at 100 percent. At 100 percent, X now then proves sufficient conditions for outcome Y insofar as the calculation of correspondent avails appropriate "coverage." "Coverage," consequently, only proves valid when the results extrapolate sufficient condition X which suggests the bare minimum to satisfy outcome Y where higher valuations for the independent variable increase instances falling within set parameters either way. Either way, consistency and coverage involve cross-tabulation by which to display the specific terms generalized from the conditions that originate outcomes through sufficient conditions (See Table 3).

(a) Cross-Tab with MPS as a Sufficient Condition for B	NOT MPS	MPS	n
NOT B	10	3	13
В	17	2	19

Table 3. Sufficient Conditions for Bilateral Breakdown with B as the Outcome

(b) Cross-Tab with PSH as a Sufficient Condition for B	NOT PSH	PSH	п
NOT B	11	2	13
В	5	4	9
(c) Cross-Tab with HMP or MOS as a Sufficient Condition for B	NOT MPH OR MPS	MPH OR MPS	п
NOT B	11	4	15
В	13	4	17

Sufficient conditions ultimately yield just one pathway toward Bilateral Breakdown (B) amid dualistic derivatives that center either Proximity (P) or Seaworthy (S) as the inner inputs around Multipolarity (M) beside Hegemony (H) on the outskirts so expressed through MPS versus PSH through consecutive constancy. Consecutive constancy common between exclusive expressions, however, warrants weighted variable validity by which to equalize directional dependence from Bilateral Breakdown (B). Bilateral Breakdown (B), though, cannot consequently commence without Multipolarity (M) nor the other three inputs in simultaneously sequence since the anomalous absence that presents presupposed syllogistic synchronicity validates temporary terms against continuous conditions either way. Either way, only 6 cases meet the criteria for Bilateral Breakdown (B) since that the solution set with input conjunctions MPS + PSH irreversibly maintain consistent results through combined coverage. Combined coverage with MPS AND PSH establishes both necessary and sufficient conditions qualitatively by two inputs common to all cases of Bilateral Breakdown (B) from Seaworthy (S) and Hegemony (H) such that the ends initiate the mere means for the ultimate irony. For the ultimate irony here typifies both the dependent variable and independent constant for Bilateral Breakdown (B) rather than any other inputs. Inputs intermittently or in consecutive concurrence cannot reveal Bilateral Breakdown amid any fourfold sequence unless qualitative mapping models Boolean Analysis with Bayesian Equilibria.

Boolean Analysis with Bayesian Equilibriums: Three-Player Decision Game

The Three-Player Decision Game (Honda 2008a) demonstrates the way in which bilateral conflict begins or ends as a result of third-party-exogenous-imperatives reminiscent to what *Destined for War* suggests through mathematical-simulation rather than hypothetical-scenario already apparent. Already apparent, previous models of The Three-Player Decision Game done elsewhere actually looked at the terms that condition bilateralism between The US and China (Honda 2008b, 2008c, 2015) either way. Either way, serious conflict to the brink of war only emerges because Taiwan typifies the geopolitical flashpoint rather than anywhere else across the Region despite what the Asian Pivot arguably includes. What the Asian Pivot arguably includes also extends to any third-party-exogenous-imperative that puts the US and China at odds. At odds thus involves such places as the South China Sea or even the Korean Peninsula that also expresses potential for models and simulation

of The Three-Player Decision Game (Honda 2007) quite relevant here. Relevant here, however, looks specifically at The US and Japan to generalize the terms and conditions for conflict with China long apparent despite no real simulation modeled through The Three-Player Decision Game. The Three-Player Decision Game depicts dualistic deterrence amid a modified model that originates outcomes by the success or failure of Mediator to simultaneously check Challenger and dissuade Defender from altering the Status-Quo through modular modification. Modular modification renames the position of Defender all the while adding Mediator to act as third-party under conditions of loss aversion over such terms for expected utility (Honda 2008a) either way. Either way, much like the typical Three-Player Decision Game, the modified model retains the mutual uncertainty extrinsically inherent to incomplete information such that all positions proceed with caution unless perceptions of threat arise and rationalize recklessness. Recklessness, or rather the absence thereof, immobilizes The Three-Player Decision Game since Challenger lacks the materialist motivations to provoke Defender and prompt potential involvement by Mediator such that dualistic deterrence must succeed from the outset despite presumptuous perceptions. Presumptuous perceptions of automatic alignment between Defender and Mediator sustains an imbalanced Status-Quo detrimental to Challenger in which insecurity initiates the Three-Player Decision Game despite such risk or cost. Such risk or cost through less abstraction with more absolution requires that the Three-Player Decision Game cast countries in accordance to the positions of Challenger amid Defender and Mediator just as previous versions establish. Just as previous versions establish, The Three-Player Decision Game referencing regional realism ironically neglect to extrapolate abstract positions with actual countries such that Challenger China against Defender Japan amid Mediator US digresses and remains so implicit. So implicit extrapolating The Three-Player Decision Game attributes China to Challenger just as Japan typifies Defender which makes The US Mediator quite accordingly (See Figure 1).



Figure 1. The Roots of a Three-Player Decision Game: China, Japan, US



Accordingly, the Three-Player Decision Game now begins after China makes Demands rather than Defaults at which point Japan Concedes or Consults with the US under uncertainties over Abandonment versus Aid despite dualistic dilemmas since what results increases diminished returns on reputation from nonintervention unto resources by engagement either way. Either way, the US risks the most losses ahead of Japan unto China with the least expenditures and relative gains incurred once the Three-Player Decision Game commences.

Once the Three-Player Decision Game commences, China does reap substantial gains insofar as Japan or the US succumb to incredulous intentions. Incredulous intentions allow several opportunities for China to gain something throughout the Three-Player Decision Game such that neither Taiwan nor the US can afford undue hesitation since resistance reduces the already limited avenues at avoiding absolute losses incidentally. Incidentally, China gains relative to Japan and The US irrespective of intent or extent concerning the Three-Player Decision Game that almost always yields immediate and imminent losses amid any such resistence against revisionism. Against revisionism, the logic that averts the Three-Player Decision Game over more risk under less returns paradoxically allows fatalistic means and ends since existent asymmetries assay initiated contestation to test or task reliable resistence amid personal prestige.

Personal prestige projecting postwar perceptions at national unity amid legalistic legacies of dynastic despotism rationalize revisionism by China in the effort to dominate and isolate the US from intervention through realities amid the power-transition either way. Either way, the rate of actual power-transition between China and the US dependently determines what Japan does. What Japan does as Defender within the Three-Player Decision Game fatalistically faults The US and China since both positions of Challenger versus Mediator intensify hegemonic-rivalries throughout the power-transition quite detrimental to any Asian Pivot. Any Asian Pivot sequentially makes Japan covet the first response before the last resort by the US since neither the Three-Player Decision Game nor dualistic deterrence need happen unless China digresses despite asymmetries that remain acquiescent from the start rather than at the end. An the end, what initiates The Three-Player Decision Game now

then means that inequalities with uncertainties assure bimodal behaviors between rational-choice versus rash-chance concerning China and Japan relative to the US insofar as immediate intentions presuppose preferences (See Table 4).

Positions	Preferences	Opportunity Costs									
	Incremental	C h i n a Gains	Japan Loses	J a p a n Balances	Status Quo	China Loses	Crisis				
China		$c_{CG} = 10$	$c_{JL} = 8$	$c_{JB} = 6$	$c_{SQ} = 4$	$c_{CL} = 0$	<i>c</i> _{<i>C</i>} -=-1				
China	Incredulous	C h i n a Gains	J a p a n Loses	J a p a n Balances	Status Quo	Crisis	China Loses				
		$c_{CG} = 10$	$c_{JL} = 8$	$c_{JB} = 6$	$c_{SQ} = 4$	$c_{C} + = 1$	$c_{CL} = 0$				
	Compliant	Status Quo	China Loses	Crisis	China Gains	Japan Loses	J a p a n Balances				
Isaan		$j_{SQ} = 10$	$j_{CL} = 8$	$j_{C} = 4$	$j_{CG} = 2$	$j_{JL} = 0$	j_{JB} - = -1				
Japan	Complacent	Status Quo	China Loses	Crisis	China Gains	J a p a n Balances	Japan Loses				
		$j_{SQ} = 10$	$j_{CL} = 8$	$j_{c} = 4$	$j_{CG} = 2$	$j_{JB} + = 1$	$j_{JL} = 0$				
US	Resolute	Status Quo	China Loses	China Gains	Japan Loses	Crisis	Japan Balances				
		$u_{SQ} = 10$	$u_{CL} = 8$	$u_{CG} = 4$	$u_{JL} = 2$	$u_{C} + = 1$	$u_{JB}=0$				
	Reluctant	Status Quo	China Loses	China Gains	Japan Loses	J a p a n Balances	Crisis				
		$u_{SQ} = 10$	$u_{CL} = 8$	$u_{CG} = 4$	<i>u_{JL}</i> =2	$u_{\rm JB} = 0$	<i>u_c</i> - = -1				

Table 4. Positions with Preferences and Opportun	ity Costs in the Three-Player Decision Game

Notice here that irrespective of positions unto preferences, opportunity costs only favor *Gains* for China versus the *Status Quo* insofar as Japan and the US avail amid the imminent diminished returns. Diminished returns thus make the opportunity costs of Japan and the US intentionally omit any such gains to express implicit concerns over loss under the Three-Player Decision Game with China already. Already, Japan and the US equally pay the literal price of the figurative opportunity cost through the best possible terms amid the worst realized conditions unless China challenges. Unless China challenges, neither Japan nor the US can cut losses by averting the Three-Player Decision Game from dualistic-deterrence. Dualistic-deterrence must stop China and Japan from rather reckless rationalization by imparting interventionism on the part of the US within or throughout the Three-Player Decision Game either way. Either way, since the *Status Quo* exerts extrinsic inherence

to the balance of power, common concerns also reflect realpolitik insofar as immediate insecurity instigates mutual mistrust between Taiwan and the US while forgetting that China dictates the Three-Player Decision Game. The Three-Player Decision Game with China makes similar situations oddly partition positions by preferences from subsequent opportunity costs even though Japan and The US covet the *Status Quo* ahead of exploiting apparent alignments amid aggregation and aggression.

Aggregation and aggression now then means the initiated ends at collective-security by which neither Japan nor The US can deter China from pursuing the Three-Player Decision Game as an alternative. As an alternative to concomitant contravention against China, Japan and the US endanger said positions such that defection replaces deterrence through buck-passing amid the Three-Player Decision Game. Buck-passing amid the Three-Player Decision Game happens at the last possible moment that contingently convenes the preferences of all positions from the exact opposite options expressed by the opportunity costs. For the positions amid the Three-Player Decision Game that expresses the duplicitous preferences of incremental and incredulous China with compliant or complacent Japan beside reluctant versus resolute US curiously channel consistency concerning opportunity costs until diminished returns rationalize restraint rather than egoistic endangerment due to incomplete information.

Due to incomplete information, no position assuredly assays adversarial preferences until diversion occurs at which point rationality versus recklessness reveals the opportunity cost penalizing Japan and the US rather than China amid the Three-Player Decision Game. The Three-Player Decision, because of incomplete information, makes any position assuredly assays adversarial preferences once diversion directs the opportunity costs that favor minimal losses on diminishing returns after such realization reifies maximum security egoistically amid the incidental extemporaneous benefits where Japan and the US reflect reluctance to risk Crisis when China challenges the Status Quo. The Status Quo so given the as incomplete information by which to take from position amid the Three-Player Decision Game, specifying generalized preferences through opportunity costs both digress and remains inconstant or inverse at the end. At the end, such expressions of position over which preferences under what opportunity costs ultimately relays recklessness versus restraint in accordance with the next best options to limit diminishing returns throughout the Three-Player Decision Game since China need not commence contestation amid Japan and The US already satisfied despite discernible disproportions. Despite discernible dispositions that concern credibility coveting capability, all positions yield equal valuations of opportunity costs when preferences iterate irrelevance where China versus Japan and The US assure the very distribution to dissuade the Three-Player Decision Game rather paradoxically. Rather paradoxically, any logic to the Three-Player Decision Game invalidates instigation insofar as asymmetries assuring power and prestige prompt precariousness through personal perceptions of the power-transition such that China challenges Japan with potential intervention from the US by exogenous-third-party-involvement.

Exogenous-third-party-involvement always concerns China amid the Three-Player Decision Game because initial instigation means the ends to slight or significant revisionism such that the only uncertainty here evokes whether Japan and The US convene concomitance either way. Either way, China gains beforehand amid any such risk that concerns uncertainty with the know diminished returns since such preferences over position raise the opportunity cost for Japan and the US under The Three-Player Decision Game. The Three-Player Decision Game thus makes China not really lose nor risk relative to Japan and The US unless both positions posit preferences that assuage alignment against realist revisionism quite unexpected. Quite unexpectedly then, The Three-Player Decision Game that expresses the Asian Pivot from deliberate designs to demonstrate distrustful disruptions between Japan and The US by China now places losses ahead of balances or gains. Ahead of balances or gains, such positions with preferences presuppose loss aversion signals credible commitment so extrinsically inherent to dualistic deterrence.

To dualistic deterrence, the utmost implications of resolute rather than reluctant preferences that position the US leaves uncertain the opportunity costs valued by both China and Japan from incomplete information throughout the Three-Player Decision Game somewhat esoteric or astrally abstract either way. Either way, each position remains aware of coexistence within the Three-Player Decision Game despite uncertainty digressing over preferences under opportunity costs beyond immediate suspicions toward egoism and loss aversion against expected utility.

Against expected utility, such figurative assumptions initiated express that The US opportunity costs covet *Crisis* before *Japan Balances* because the literal ends of the Three-Player Decision Game means China probabilistically goes the distance rather than coming to an immediate halt from severe loss aversion by realistic threat perceptions. Realistic threat perceptions consequently make rash-chance rather than rational-choice justify recklessness versus restraint expressing the dualistic-deterrence-dilemma between Japan and China that now intensifies due to the desperation and uncertainty within or throughout the Three-Player Decision Game irrespective. Irrespective, the failure or success of The US to check China and Japan by dualistic-deterrence requires utility valuations that yield preferences from the opportunity costs expressed throughout positions within the Three-Player Decision Game accounting for position. Accounting for position preferences and opportunity costs also requires boolean operators or bimodal pathways that express said utility valuations as the worst-case-scenario after all next-best-options elapse amid the Three-Player Decision Game (See Table 5).

	<u>Ch</u>	<u>iina</u>		Ja		<u>US</u>	
	x_{I1} = incredulous	$x_{I2} = $ incrementa	al <i>i</i> y	$w_{C1} = $ compliant	y_{C1} = complace	nt q	z = resolute
Settlement	0	0		1	1	$p_{ m J}$	1
Separation	1	0	1	1	p_{J} $1 - p_{J}$	1/2	1/2
Standby	1	$0 < x_{I2} < 1$	p _c < <i>i</i> <	(1 1	$0 < y_{C1} < 1$	$p_{\rm J} < q < 1$	0 < z < 1
Strike	1	1	p _c	1	$\frac{p_{\rm J}(1-q)}{q(1-p_{\rm J})}$	$\frac{7 p_{\rm C}(1-q)}{2}$	$\frac{1}{4-2p_C}$

Table 5. The Preferences of Position: Settlement, Separation, Standby, Strike

Five of the probabilities— x_{I1} , x_{I2} , y_{C1} , y_{C2} , z—express variables that denote positions with preferences before potential intervention. Potential intervention assures that only two probabilities —r and q—remain to convey contingencies with alternate avenues quite detrimental or determinant for The US by moving after Japan and then China in the Three-Player Decision Game from the worstcase-scenario. The worst-case-scenario presuming probabilities p_C and p_J to posit incredulous China against complacent Japan where $0 < p_J < 1$ when $0 < p_C < 1$, such valuations cannot also automatically preclude preferences of resolute US either way. Either way, the worst-case-scenario involving potential intervention from the US implies explicit threats to the *Status Quo* since subsequent moves by both Japan and China risk readjustments that destabilize the balance of power through both probabilities. Both probabilities expressed also measure the credible commitment concerning China and Japan to defy the US such that higher utility valuations diminish returns on the *Status Quo* unless The Three-Player Decision Game never commences.

Unless The Three-Player Decision Game never commences, the next-best-option against the worst-case-scenario yields *Settlement* since China never Demands since Japan remains secure subsequently rendering any preference of the US however irrelevant. However irrelevant with personal prestige amid asymmetric alignments that favor Japan and the US, China might make Demands thereby instigating the Three-Player Decision Game. Instigating The Three-Player Decision Game makes the preferences of China somewhat clarify incomplete information all the while Japan remains unclear amid the US despite inclinations toward Aid against Abandonment either way. Either way, not knowing what Japan covets against China yields *Separation* since uncertainty over compliant and complacent preferences fall just under *Settlement* such that The US must Aid to credibly reconcile the dualistic-deterrence-dilemma.

To credibly reconcile the dualistic-deterrence-dilemma, in turn, opens the odd possibility of Crisis since higher-loss-aversion-concerns motivate escalation. Escalation resulting after the Three-Player Decision Game begins, makes incomplete information reiterate restraint rather than recklessness especially for the US which must defend the Status Quo best as possible. Best as possible then, Herein lies the true manifestation of "Strategic Ambiguity" which the Three-Player Decision Game now attributes to *Standby*. *Standby* involves dualistic-deterrence because what the US truly covets cannot happen without knowing the preference of Japan relative to China which requires credible commitment. Credible commitment, in this case, goes through Japan before coming to The US after China commences The Three-Player Decision Game. The Three-Player Decision Game makes the preferences of China toggle between incremental and incredulous since restraint over recklessness increases the likelihood for Standby insofar as such motivations under loss aversion remain rather low relative to what Japan beside The US might do in response thus ensuring that all positions proceed with caution throughout the Three-Player Decision Game. Caution throughout the Three-Player Decision Game, in turn, also paradoxically yields the exact opposite because incomplete information with known asymmetries that favor Japan and the US channel incredulous preferences motivating China to challenge the Status Quo irrespective of incremental or incredulous. Irrespective of incremental or incredulous now makes *Strike* quite plausible because such outcomes reduce the probability for compliant Japan which inversely increases inclinations toward resolute US to maintain the Status Quo best as possible even with potential Crisis looming. Potential Crisis looming makes probabilistic outcomes originate the difference between Standby versus Strike that expresses a

positive-upward-slope that veers toward the right as the literal slope. The literal slope thus postulates that increased credible commitment of China and Japan makes *Strike* more likely just as lower levels limit successful dualistic-deterrence while endangering The US either way. Either way, *Strike* literally expresses the worst-case-scenario against the next-best-option amid The Three-Player Decision Game somewhat out of order. Somewhat out of order then, amid adverse diminishing returns, the resultant Equilibria now expresses the greater likelihood for *Settlement* prior to the slightly equal *Standby* with *Separation* quite minimal beside the rather remote and skewed *Strike* ultimately (See Figure 2).



Figure 2. Perfect Bayesian Equilibria: Settlement, Separation, Standby, Strike

Ultimately, *Settlement* or *Standby* now then posits probabilities between China and Japan ahead of the remote *Separation* unto *Strike* involving The US either way. Either way, *Settlement* and *Standby* sufficiently reconciles regional relations in ways that exogenous-third-party-interventions expect since reluctant realizations of mutual coexistence yield "strategic ambiguity" despite any Three-Player Decision Game precluding Perfect Bayesian Equilibrium alternatives over *Separation* and *Strike* under incomplete information. Incomplete information, in turn, curiously closes the discursive disconnect between theory and the real world of current events concerning regional relations through conflict resolution not always specified without empirical evidence. Empirical evidence, though, requires rigorous testing far beyond immediate simulation beside comparative-qualitative analysis already digressed ahead of any discussion that evaluates preliminary findings toward future research.

Preliminary Findings Toward Future Research

Preliminary findings toward future research must first reflect realities of the power-transition as the means that end with The Thucydides Trap. The Thucydides Trap analogies Ancient Athens against Superior Sparta to relay realist international relations theory across time and space that yields instability since the power-transition amid mutual perceptions over dominant decline under revisionist risings simply complicates the risk of war. The risk of war, consequently, further increases by the finite overlapping spheres of influence from third- party obligations that undermine stability as The Thucydides Trap somewhat suggests amid allusions to Sea Power (Stavridis 2017) inherent in several case-studies. Several case-studies, however, stop short of full disclosure to accurately forecast hegemonic-wars as *Destined For War* concedes amid deliberate stipulations that prevent empirical testing from historical discussion versus current events.

Historical discussion versus current events thus supposedly makes empirical evidence both impossible and irrelevant. Irrelevant, though, need not render other types of testing impossible such as qualitative-comparative-analysis that bridges the gap between diplomatic-history and political science. Political science so prone to extreme empiricism can also moderate modeling of concepts by "Just-Plain-Data-Analysis" (Klass 2006) from organized data. Organized data, though, can complicate simplification of terms and conditions just as Boolean Algebra demonstrates through various operators. Various operators that express correspondent inputs amid binary combinations between 1 and 0 across several categories sometimes miss all possibilities at present. At present, none of the four major inputs express the possibility of Bilateral Breakdown digresses and remains mutually exclusive against interaction or coexistence either way. Either way, the possibility of any and all inputs interacting with Bilateral Breakdown creates classifications hereto unforeseen with unpredictable results. Unpredictable results render realizations of incomplete necessary and sufficient conditions that otherwise establish all available terms for Bilateral Breakdown in the end. In the end, such omissions initiate the means to rethink requisites ahead of four new possible categories replete with past or present instances. Past or present instances conceivable change what yields Bilateral Breakdown already apparent.

Already apparent, the existence of third-parties whether fiends or friends influence conflict between two great powers inline with the Three-Player Decision Game. The Three-Player Decision Game, however, general specifies only one-case at a time rather modeling several-studies concurrently. Several-studies concurrently make possible the comparisons necessary for comprehensive models. Comprehensive models, incidentally, inverts relationships between Boolean Algebra and Bayesian Analysis now then dependent rather than deterministic so stipulated. So stipulated, another set of operations and inputs emerge to model under what necessary or sufficient conditions exist over which cases in comprehensively expressing the terms for Bilateral Breakdown through comparisons between The Three-Player Decision Game across time. Time, indeed, establishes the set of parameters in which *Destined For War* can accurately predict *The Coming Conflict with China* (Bernstein and Munro 1997) twenty-years earlier.

Twenty-years earlier, concern for third-parties such as Japan or Taiwan unto Korea ultimately put China and The US at odds. At odds, literally, suggested regional control over Pacific-Asia under which The US and China exist while trying to keep stable the balance of power. The balance of power, while arguably disproportionate, cannot concede to stipulations at any hegemonic-transition despite concerns over US Decline amid Rising China (Chan 2013; Cliff 2015; Fenby 2017; Kai 2016; Nye 2011; Rapkin and Thompson 2011; Roy 2013) either way. Either way, the power-transition digresses to remain premature despite the status-quo quite influx and interactive amid interdependence. Interdependence, incidentally, also describes or rather prescribes possibilities to avoid *The Coming Conflict with China* that *Destined For War* concedes as almost counterintuitive by confidence-building from mutual cooperation. Mutual cooperation, between The US and China, as a real possibility in the near future establishes alternative expressions of Boolean Algebra with the

exact opposite. The exact opposite—defining what sufficient and necessary conditions convene interdependence—creates a pathway for peace rather than conflict unknown without appropriate inputs that need not interact however consecutive or intermittent either way. Either way, the possibility for peace requires realizations of further and future research done elsewhere rather than here at present.

At present, reality reflects the possibility for conflict between The US and China that stops short of empirical-testing by qualitative-comparative-analysis apart from quantitative-comprehensivestructure against static-similarity with dynamic-differentials. Dynamic-differentials, already discussed, literally avails a theory subject to the objectives of empirical-testing since the concept also argues the way in which third-parties create bilateral conflicts between primary-powers and revisionistregimes otherwise content without any need nor want for imminent hegemonic-conflict. Imminent hegemonic-conflict far beyond immediate mistrust requires perceptions of loss-aversion (Carlson and Dacey 2006; Jervis 1994; Langlois and Langlois 2005; Levy 1994; Rabin 2000; Shaley 2002; Tversky and Kahneman 1992) by both sides that worsen from third-party appearance as The Three-Player Decision Game expresses with incomplete information amid Perfect Bayesian Equilibria. Bayesian Equilibria—Settlement, Separation, Sucker, Strike—cannot condition such terms methodologically without extrapolating inferences by which Boolean Algebra provides through operators or truth tables derived from data matrices and inputs attributable to qualitative-comparative-analysis. Qualitativecomparative-analysis, however, cannot answer the question of empiricism indefinitely. Indefinitely, against limitations let alone intent, testing "dynamic-differentials" provides the empirical evidence to falsify Destined For War in terms or conditions that predict hegemonic-hostilities between The US and China ahead of regional-rivalry. Regional-rivalry initiates mere means in the end to ultimately understand Bilateral Breakdown.

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