

Research Article

# Systematizing Negotiation Strategies Through TRIZ-based Contradiction Resolution: Toward a Framework for Negotiation Engineering

Jae Yup Chung<sup>1,\*</sup> , Chang Yong Song<sup>2</sup> 

<sup>1</sup>Department of International Trade, Namseoul University, Cheonan-si, Republic of Korea

<sup>2</sup>Department of Culture & Tourism, Halla University, Wonju-si, Republic of Korea

## Abstract

This study reconceptualizes negotiation as a structured process of contradiction resolution by applying the Theory of Inventive Problem Solving (TRIZ) to the analysis of strategic negotiation behavior. Negotiation theory has developed both rich descriptive accounts of psychological and behavioral dynamics and prescriptive frameworks for rational decision-making, yet the systematic creative transformation of constraint sets—how negotiators redesign the problem space rather than merely optimize within it—remains undertheorized. We argue that many core negotiation dilemmas constitute physical contradictions in the TRIZ sense: situations in which a single system must simultaneously satisfy opposing requirements. The study applies TRIZ’s four separation principles—time, space, condition, and whole–part separation—to these contradictions and develops a mapping procedure linking contradiction identification to separation principles, inventive principles, and observable tactics. Ten negotiation tactics drawn from the extensively documented public record of Donald J. Trump’s business and political negotiations serve as an empirical illustration in a theory-building case study design, selected as an extreme case that renders structural patterns maximally visible. We situate TRIZ within the broader landscape of creative problem-solving frameworks—including brainstorming, lateral thinking, Design Thinking, and SCAMPER—and argue for its distinctive suitability due to its contradiction-specific, algorithmic structure. The proposed framework, termed Negotiation Engineering, integrates the precision of engineering design with the behavioral complexity of negotiation, offering implications for negotiation theory, pedagogy, and AI-assisted decision support. Limitations of the single-case design and the partial applicability of TRIZ to non-formalizable negotiation dimensions are explicitly acknowledged.

## Keywords

TRIZ, Physical Contradiction, Separation Principles, Negotiation Engineering, Integrative Negotiation, Creative Problem Solving, Negotiation Strategy

\*Correspondence: Jae Yup Chung ([jay.chung@yonsei.ac.kr](mailto:jay.chung@yonsei.ac.kr))

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## 1. Introduction

Negotiation has attracted sustained scholarly attention across economics, psychology, and management as one of the most consequential forms of human problem solving. Its distinctive challenge lies in requiring actors to pursue value creation and value claiming simultaneously—to cooperate and compete, disclose and conceal, build relationships and assert power—under conditions of uncertainty and interdependence [31, 60]. Decades of research have produced two broadly complementary traditions. Descriptive accounts illuminate the psychological mechanisms that drive negotiator behavior: cognitive biases and heuristics [6], the role of affect [4, 59], power asymmetries [28], and identity-based constraints such as gender [9]. Prescriptive frameworks, pioneered by Raiffa (1982) [44] and extended by Lax and Sebenius (1986) [31] and Fisher, Ury, and Patton (1991) [22], offer normative guidance on how parties can identify joint gains, set reservation points, and deploy Best Alternatives to Negotiated Agreement (BATNA). Formal game-theoretic approaches—from Nash's (1950) foundational bargaining solution through Rubinstein's (1982) [45] alternating-offers model—characterize equilibrium outcomes under well-specified preference and information structures.

These traditions have substantially advanced the field. Yet they share a structural gap: neither fully addresses the creative mechanism by which negotiators transform apparent deadlocks into novel agreement structures. Prescriptive frameworks offer rules for optimization within a given constraint set but provide limited guidance on how the constraint set itself can be creatively redesigned. Descriptive accounts explain when negotiators do or do not reach integrative outcomes but rarely specify the cognitive procedure by which competing demands are inventively reconciled. The question of how a negotiator converts the inherent tensions of the situation—between firmness and flexibility, between transparency and leverage—into a deliberately engineered strategy remains, as Thompson (2012, p. 3) [54] notes, "more art than science."

This gap motivates the present study. We argue that the Theory of Inventive Problem Solving (TRIZ), developed by Altshuller (1984) [1] through systematic analysis of patented innovations, offers a structured framework for exactly this creative problem-transformation process. TRIZ treats innovation not as an unstructured eureka event but as the systematic resolution of contradictions through identifiable separation principles and inventive patterns. Its central insight—that apparent trade-offs can be transcended by distributing conflicting requirements across different dimensions of time, space, condition, or system hierarchy—maps naturally onto the persistent dilemmas of negotiation. Importantly, TRIZ aims at win-win configurations rather than zero-sum compromise, an aspiration that aligns it with integrative bargaining theory [22, 24, 41].

We position TRIZ alongside other creative problem-solving

frameworks—brainstorming [38], lateral thinking [16], Design Thinking [10], and SCAMPER [35]—and argue that its contradiction-specific, algorithmic structure gives it particular advantages in the negotiation context. While existing creativity frameworks valuably stimulate divergent thinking, TRIZ uniquely provides a systematic pathway from structured contradiction diagnosis to principle-driven resolution, enabling both the explanation of observed tactics and the generation of new ones.

Three research questions guide the inquiry. First, can core negotiation dilemmas be formally modeled as physical contradictions carrying the same structural properties as those found in engineering design? Second, if so, how do TRIZ's four separation principles—in time, in space, by condition, and between whole and parts—account for effective negotiation tactics? Third, what implications does this analytical reformulation hold for negotiation theory, education, and practice?

The primary aim of this article is theory-building: to demonstrate that TRIZ-based contradiction analysis can generate a coherent vocabulary for negotiation tactics. The contribution lies in conceptual integration and framework specification, not in estimating effect sizes or testing causal hypotheses.

Empirically, the study adopts a theory-building case design [20, 61] drawing on the extensively documented negotiation record of Donald J. Trump—selected as an extreme case [23] on the grounds that his overt, contradiction-rich style renders structural patterns maximally visible for framework development. In this sense, the case functions as an existence proof: if TRIZ-based contradiction analysis can yield a coherent interpretation in an extreme and contradiction-rich setting, the framework warrants broader empirical examination in more typical negotiation contexts. We explicitly acknowledge the idiosyncratic and non-representative character of this case and the analytical limitations it entails; broader empirical validation constitutes the primary agenda for future work.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature: negotiation theory (including key constructs such as BATNA, anchoring, emotions, power, and game-theoretic approaches), creativity research and its connection to negotiation, and TRIZ and contradiction resolution theory. Section 3 develops the structural model of TRIZ-based negotiation analysis. Section 4 presents the methodology. Section 5 reports the case analysis. Section 6 discusses implications for theory and practice. Section 7 concludes.

## 2. Theoretical Background

This section reviews the theoretical foundations that inform the present study. It first surveys major strands of negotiation theory, then turns to research on creativity and structured problem-solving frameworks, and finally introduces TRIZ and contradiction resolution theory as the conceptual bridge to

negotiation engineering.

## 2.1. Negotiation Theory: Descriptive, Prescriptive, and Formal Traditions Eadings

Negotiation research has developed along three interwoven strands that together constitute the theoretical landscape into which the present study intervenes.

### 2.1.1. The Distributive-integrative Framework and Its Extensions

The foundational conceptual distinction in negotiation research—between distributive bargaining aimed at claiming value and integrative negotiation aimed at creating it—was established by Walton and McKersie (1965) [60] and subsequently elaborated by Pruitt (1981) [41] and Lax and Sebenius (1986) [31]. Integrative agreements are made possible when parties have differing priorities across multiple issues: by trading concessions on lower-priority items for gains on higher-priority ones, both sides can improve relative to simple compromise [44, 55]. The dual-concern model [8, 42] extended this framework to incorporate relationship motivations, proposing that negotiators vary in the weight they assign to their own versus the other party's outcomes, with problem-solving orientation emerging when both concerns are high.

Contemporary research has substantially refined these foundations. De Dreu, Weingart, and Kwon (2000) [19] demonstrated that pro-social versus pro-self motivational orientation systematically predicts the use of integrative versus distributive strategies. Curhan, Elfenbein, and Xu (2006) [15] showed that subjective value—comprising satisfaction with process, relationship, and self—is a distinct outcome dimension that partly decouples from objective economic gains. Bazerman, Curhan, Moore, and Valley (2000) [5] reviewed evidence that even experienced negotiators frequently leave integrative potential unrealized, often failing to identify compatible interests that would improve both parties' outcomes.

### 2.1.2. Key Constructs: BATNA, First Offers, Emotions, Power, and Gender

Several empirically established constructs are central to contemporary negotiation research and bear directly on the behaviors analyzed in this paper. The Best Alternative to a Negotiated Agreement (BATNA) [22] defines the reservation point below which no deal is rational. Research confirms that stronger BATNAs increase both aspirations and resistance to concession, giving negotiators with superior alternatives greater leverage and psychological confidence [22, 39]. A negotiator's BATNA is thus a primary determinant of power asymmetry in the dyad.

First offers function as cognitive anchors that disproportionately influence final agreements [26, 30]. Extreme first of-

fers set favorable anchors and generate more room for concession, improving final outcomes for the offering party—provided they remain within the range of plausibility and do not trigger negative reciprocity or breakdown. The strategic use of extreme opening positions, analyzed in Section 5, is thus deeply embedded in empirical negotiation research.

Emotions exert pervasive influences on negotiation dynamics. Positive affect promotes integrative thinking and trust building [12, 25], while negative emotions such as anger can serve as strategic signals of resolve [49] or as leverage when the counterpart is motivated to appease an angry party [59]. Research further distinguishes between experienced and expressed emotion, noting that strategic emotional display is a learnable behavioral repertoire rather than a simple readout of internal states [3]. The deliberate modulation of emotional expression—appearing angry, enthusiastic, or indifferent according to tactical logic—connects directly to the conditional and temporal separation principles analyzed in this paper.

Power asymmetries shape negotiation behavior through both material and psychological channels. Parties with greater power tend to make more ambitious first offers, make fewer concessions, and achieve better outcomes; parties with less power often experience a chilling effect on aspiration formation [33]. Kim and Fragale (2005) [28] distinguished power from dependence, showing that the latter captures relational structure more precisely than simple resource comparisons. The walk-away tactics and multi-issue linkage strategies examined in Section 5 directly manipulate perceived dependence.

Gender differences in negotiation have been extensively documented. Women tend to initiate salary negotiations less frequently and achieve smaller gains when they do [2, 9], while research by Kray, Thompson, and Galinsky (2001) [29] showed that stereotype activation can both impair and, under certain conditions, enhance women's negotiation performance. Gender interacts with role expectations, relationship context, and cultural norms in complex ways, underscoring that negotiation behavior is embedded in social identity structures that lie largely outside the scope of TRIZ formalization.

### 2.1.3. Prescriptive Frameworks: From Raiffa to Behavioral Decision Theory

Parallel to the behavioral tradition, a prescriptive stream has sought to guide negotiators toward better decisions. Raiffa (1982) [44] pioneered decision-analytic negotiation support, offering systematic procedures for preference elicitation, issue scoring, and optimal agreement identification. Lax and Sebenius (1986) [31] developed the "manager as negotiator" framework, integrating distributive and integrative logics within a single deal-design perspective. Fisher et al.'s (1991) [22] principled negotiation approach—separating people from problems, focusing on interests rather than positions, inventing options for mutual gain, and insisting on objective criteria—has achieved wide practical influence. Bazerman and Neale (1992) [6] synthesized behavioral decision research

with prescriptive guidance, showing how systematic debiasing can improve negotiation outcomes.

These frameworks share a common structural feature: they prescribe how to optimize within a given problem structure. They are less explicit about how the problem structure itself can be creatively reconfigured—how a skilled negotiator transforms an apparent deadlock into a new possibility space. This gap, as we argue, is precisely where contradiction-based frameworks such as TRIZ offer a complementary contribution.

#### 2.1.4. Game-theoretic Approaches

Formal game theory offers rigorous accounts of strategic interdependence in negotiation. Nash (1950) [37] proposed the foundational bargaining solution, characterizing the unique outcome satisfying axioms of efficiency, symmetry, scale invariance, and independence of irrelevant alternatives. Rubinstein's (1982) [45] alternating-offers model derived equilibrium divisions from impatience, showing that patience confers bargaining advantage. Mechanism design theory [36] addresses optimal institutional rules for eliciting private information and implementing efficient outcomes. Formal models have been applied to bilateral monopoly [7], multi-party negotiations [47], and strategic information revelation [14].

Game-theoretic approaches provide powerful analytical tools but are subject to well-known limitations. They require fixed, well-defined preference structures and typically assume full rationality, making them less suited to capture the creative reframing and dynamic redefinition of issues that characterize negotiation in practice [5, 44]. Behavioral game theory [11] partially addresses these limitations by incorporating psychological factors such as fairness preferences and loss aversion, but the systematic creative transformation of the game structure itself—the invention of new issues, packages, and procedural rules—remains outside the formal framework. It is in this inventive, problem-redesigning dimension that the TRIZ approach makes its distinctive contribution.

## 2.2. Creativity in Negotiation and Structured Problem-solving Frameworks

### 2.2.1. The Role of Creativity in Negotiation

Creativity plays a theoretically recognized but methodologically underspecified role in negotiation. Carnevale and Isen (1986) [13] provided early empirical evidence that positive affect facilitates creative, integrative problem solving, linking the creativity literature to bargaining outcomes. Thompson and Hastie (1990) [56] showed that even simple procedures for sharing information about priorities dramatically increase the rate of integrative agreement, implicitly treating the construction of novel trades as a creative act. More explicitly, Carnevale (2006) [12] argued that conflict can serve as a stimulus for creative thinking by forcing parties to explore the problem space beyond initial framings. De Dreu, Nijstad, and van Knippenberg (2008) [18] formalized this in a cognitive-

motivational model, proposing that epistemic motivation—the drive for deep, systematic information processing—enables the generation of integrative solutions.

Despite these contributions, negotiation theory has not systematically connected to the formal literature on creative problem-solving methodologies. This gap is consequential: if creativity is acknowledged as central to integrative negotiation, then the question of how to deliberately induce and structure that creativity deserves explicit theoretical treatment.

### 2.2.2. Creative Problem-solving Frameworks and Their Limitations for Negotiation

Several structured creativity methodologies have been developed and evaluated in organizational and design contexts. Brainstorming (Osborn, 1953) [38] encourages divergent thinking by temporarily suspending evaluation and promoting free ideation. Lateral thinking (de Bono, 1970) [16] promotes non-sequential approaches to problem restructuring through deliberate provocation and perspective shifting. Design Thinking (Brown, 2009) [10] emphasizes human-centered iteration through empathy, ideation, and rapid prototyping. SCAMPER (Michalko, 2006) [35] provides a checklist of transformational operators—Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Reverse—for systematic variation of existing solutions. Six Thinking Hats (de Bono, 1985) [17] organizes group deliberation through explicit role differentiation.

While each of these frameworks valuably promotes creative ideation, they share structural limitations in the negotiation context. First, they are predominantly generative rather than diagnostic: they help produce ideas but do not systematically identify the specific structural contradictions that need to be resolved. Second, they do not provide a principled mapping from problem structure to solution type—the kind of conditional logic that translates a specific contradiction into a specific class of resolution strategies. Third, they were largely developed for product design or organizational problem solving rather than for strategic interaction under adversarial conditions.

TRIZ addresses each of these limitations. It begins with structured contradiction diagnosis rather than open ideation. It provides a principled mapping from contradiction type (technical or physical) to separation principle to inventive principle—an algorithmic pathway that is both reproducible and teachable. And it was developed from systematic analysis of problem-solving across domains, giving it a scope of application that extends to the strategic and behavioral. Its recent adaptation to business and management contexts [27, 34] further demonstrates its transferability to non-technical domains, providing a conceptual stepping stone toward the negotiation application developed in this paper.

### 2.2.3. TRIZ Offers a Superior Comparative Framework

The case for preferring TRIZ over existing creativity frameworks in the negotiation context rests on three grounds. First,

TRIZ is contradiction-specific: it diagnoses not just "what is the problem" but "what opposing requirements must coexist," which maps directly onto the inherent dilemmas of negotiation. Second, TRIZ is systematic rather than heuristic: the separation principles and inventive patterns provide a finite, structured vocabulary for solution types, enabling comparison and generalization across cases. Third, TRIZ aspires explicitly to win-win configurations—avoiding the degradation of any parameter below its current value—which aligns with integrative negotiation's normative goal of joint value expansion [22, 41]. Together, these properties make TRIZ the most structurally appropriate creativity framework for the analytical purposes of this study.

### 2.3. TRIZ and Contradiction Resolution Theory

The Theory of Inventive Problem Solving (TRIZ) originated with Genrich Altshuller's systematic analysis of large bodies of patented inventions, from which he derived the central thesis that genuine innovation almost always involves the resolution of contradictions [1]. TRIZ distinguishes between two fundamental contradiction types. A technical contradiction arises when improving one system parameter degrades another—for instance, increasing structural strength increases weight. A physical contradiction exists when a single system element must simultaneously possess opposing properties, such as a component that must be both rigid and flexible, or opaque and transparent.

Physical contradictions are addressed through four canonical separation principles. Separation in time assigns contradictory states to different moments or phases: a component is rigid when structural integrity is needed and flexible when deformation is required. Separation in space distributes conflicting properties across different locations or subsystems. Separation by condition resolves the contradiction by making each property manifest only under specific circumstances or relationships. Separation between the whole and its parts allows the system to exhibit properties at the collective level that differ from those of individual components—a rigid structure composed of flexible elements, or a uniform message delivered through diversified channels.

Complementing the separation logic, TRIZ provides a repertoire of 40 inventive principles—abstract solution patterns derived from successful inventions, including Segmentation, Dynamics, Asymmetry, Preliminary Counteraction, Discarding and Recovery, and Copying, among others. A contradiction matrix links pairs of improving and worsening system parameters to inventive principles that have historically resolved similar conflicts, translating contradiction recognition into a prescriptive solution pathway.

Although developed for engineering and product design, TRIZ has been productively extended to service design, process improvement, and business management [34, 51, 52]. Bibliometric synthesis by Ishrat et al. (2023) [27] documents

the emergence of "Business TRIZ" with domain-specific parameters and contradiction matrices adapted to problems in branding, customer experience, human resource management, and organizational design. Systematic literature reviews report substantial average performance improvements in TRIZ-assisted process innovation, supporting its generalizability across technical and organizational domains. Most recently, multi-agent architectures implementing TRIZ steps through large language models (Szczepanik & Chudziak, 2025) [53] suggest that parts of the contradiction-resolution process are amenable to computational assistance, opening possibilities for AI-supported negotiation design tools.

Within negotiation specifically, TRIZ offers a particularly compelling analytical lens. Negotiation is pervaded by physical contradictions: a negotiator must be cooperative and competitive, must reveal information to build trust yet conceal information to preserve leverage, and must move toward agreement while preserving a credible walk-away option. Each of these paradoxes parallels the TRIZ engineering requirement for a component to satisfy opposing criteria simultaneously. By applying separation principles, these behavioral paradoxes can be reinterpreted as structured design problems—enabling a systematic, principle-driven account of effective negotiation strategy.

## 3. Modeling Negotiation as a System of Physical Contradictions

### 3.1. Defining Physical Contradictions in Negotiation

Negotiation operates within a field of interdependent contradictions. Whereas conventional decision-making models view these contradictions as trade-offs to be balanced through compromise, TRIZ treats them as design problems that can be structured, separated, and resolved without degradation. The present study models the negotiation process as a system of physical contradictions situated between two core imperatives: an integration imperative reflecting the cooperative drive toward agreement, joint value creation, and relationship stability; and a separation imperative reflecting competitive value-maximization, self-protection, and the preservation of the option to withdraw.

These opposing imperatives mirror the TRIZ notion of a physical contradiction in which a single system property must be simultaneously high and low. A negotiator must be, for example, predictable enough to build trust yet unpredictable enough to maintain leverage; transparent enough to signal good faith yet opaque enough to protect confidential constraints; firm enough to signal resolve yet flexible enough to reach agreement. The key insight of the TRIZ framework is that such contradictions need not be averaged through uneasy compromise—they can instead be separated through contex-

tual redistribution, allowing each requirement to be fully satisfied in its appropriate dimension.

The negotiation system can be represented formally as  $N = \{O, S, R, E\}$ , where O denotes the objective outcome space, S the set of stakeholders, R the relational variables (trust, dependence, perception), and E the environmental conditions. Within this system, contradictions are expressed as states in which improvement in one parameter—such as relational harmony—appears to entail deterioration in another, such as economic gain. Negotiation Engineering applies TRIZ logic to reconfigure N such that both parameters improve, or at least co-exist, through contextual separation rather than simple trade-off.

### 3.2. Structural Framework for TRIZ-based Negotiation Analysis

To operationalize the conceptual bridge between TRIZ and negotiation, the study adopts a four-step analytical model con-

necting abstract contradiction structures to concrete negotiation tactics:

Identify the contradiction — Detect the underlying physical contradiction embedded in a negotiation scenario (e.g., "assert dominance" versus "maintain relationship").

Select the separation principle — Determine the appropriate TRIZ separation mode—time, space, condition, or whole/parts—through which the conflicting attributes can be dissociated.

Map the inventive principle — Identify which of the 40 inventive principles best captures the observed or desired pattern of resolution.

Derive the negotiation tactic — Translate the abstract inventive logic into a concrete behavioral or rhetorical strategy observable, teachable, or designable in practice.

This framework defines a TRIZ-driven negotiation ontology in which each tactic corresponds to a specific combination of contradiction type, separation dimension, and inventive logic. Table 1 illustrates the mapping logic with stylized examples drawn from the negotiation literature.

*Table 1. TRIZ-based mapping framework: Illustrative examples.*

Negotiation Dilemma	TRIZ Separation Principle	Inventive Principle	Behavioral Tactic
Need to be predictable yet unpredictable	Separation in time	#15 Dynamics	Controlled unpredictability; delayed disclosure
Need to sustain dialogue yet signal power	Separation in space	#34 Discard & Recover	Walk-away; staged withdrawal
Need to demand more yet remain credible	Separation by condition	#4 Asymmetry	Extreme initial offer; conditional concession
Need to project unity yet allow internal flexibility	Separation between whole and parts	#3 Local Quality	Personalized sub-team negotiation; differentiated roles

The framework operates across multiple analytical levels. At the micro level, it explains specific tactics and momentary decisions as local applications of separation and inventive principles—analogue to an individual engineering solution. At the meso level, it structures negotiation sequences as temporal compositions of separated contradictions: for instance, integrating early around shared interests and separating later around residual distributive issues. At the macro level, it conceptualizes negotiation style as an emergent property shaped by dominant contradiction-resolution patterns over time.

## 4. Methodology

### 4.1. Research Design

This study employs a theory-building case study design (Ei-

senhardt, 1989; Yin, 2018) [20, 61] in which the primary objective is conceptual framework development rather than statistical generalization. Theory-building case research is recognized as appropriate when the phenomenon of interest lacks adequate formal articulation, when the goal is to develop constructs and propositions rather than to test them, and when the richness of a specific instance can illuminate mechanisms not yet visible in aggregate data [21]. Such designs are particularly appropriate when the phenomenon is under-theorized and when rich, mechanism-focused description is needed as a precursor to statistical testing. The present study meets each of these conditions: the application of TRIZ logic to negotiation is a new conceptual initiative, and the analytical priority is to demonstrate the feasibility of the mapping procedure and to elaborate its structure. Accordingly, the study is intended to offer analytic generalization and conceptual clarification rather than statistical generalization.

## 4.2. Case Selection: The Logic of Extreme Cases

Within qualitative and case study research traditions, extreme or maximal cases—those in which the phenomenon of interest is expressed in its most pronounced, clear, or visible form—are recognized as particularly productive for theory building [20, 23]. Extreme cases are not chosen because they are representative or typical, but because their intensity renders the mechanisms under investigation maximally observable and analytically tractable. The logic is directly analogous to using extreme physical conditions (very high temperatures or pressures) in engineering research: the goal is to reveal structural properties, not to characterize the distribution of ordinary cases.

Donald J. Trump was selected as the focal case on these grounds. His negotiation style—spanning real-estate development, corporate restructuring, and high-stakes political and diplomatic negotiations during his presidency—is exceptionally overt, extensively documented, and structurally rich in explicit contradictions. Unlike most negotiators, whose strategic reasoning remains largely private, Trump has articulated elements of his approach directly in published accounts [57] and public statements, while his specific episodes have been documented in detail across journalistic investigations, government records, and memoirs of former participants. This produces an unusually tractable evidentiary context for qualitative case analysis.

Critically, Trump was not selected because his style is representative of negotiators in general. On the contrary, his profile is widely recognized as idiosyncratic in its combination of extreme demands, high public visibility, and tolerance for confrontation [32]. The theoretical justification for this selection is precisely its extremity: if TRIZ-based contradiction analysis can systematically account for such a challenging and paradox-rich profile, it provides a strong existence proof for the framework's analytical reach. The appropriate inference from this case is not that all negotiators follow TRIZ-like logic, but that TRIZ provides a coherent structural vocabulary for explaining even extreme negotiation patterns. Broader empirical validation—across cultures, industries, institutional contexts, and negotiation styles—is explicitly identified as the primary agenda for subsequent research.

## 4.3. Data Sources and Tactic Selection

Ten negotiation tactics were selected from the documented public record according to the following explicit criteria: (1) the tactic is explicitly described, or consistently attributed to Trump across multiple independent sources, reducing reliance on single-source interpretations; (2) it involves a discernible contradiction between competing objectives that can be expressed in TRIZ terms; and (3) it can be mapped, via a specific separation principle, to one or more of TRIZ's 40 inventive principles. Tactics failing to meet all three criteria were excluded. Primary sources include Trump and Schwartz (1987) [57], public statements, and documented outcomes of major

negotiations; secondary sources include systematic journalistic accounts and academic analyses of specific episodes. The requirement for multi-source corroboration addresses, at least partially, the concern about researcher interpretation bias.

## 4.4. Analytical Procedure and Limitations

Each tactic was analyzed through the four-step framework developed in Section 3.2: contradiction identification, separation principle selection, inventive principle mapping, and behavioral tactic derivation. The analytical coding was conducted by the lead author following TRIZ inventive principle definitions as specified in Altshuller (1984) [1] and Mann (2002) [34]. All TRIZ–tactic mappings were coded by the first author; accordingly, inter-rater reliability could not be estimated. Consequently, the mappings should be viewed as theoretically grounded but provisional; multi-coder reliability studies are needed to assess their robustness. The absence of such procedures means that the mappings presented in Section 5, while theoretically motivated and internally consistent, remain preliminary and subject to replication.

More fundamentally, the qualitative, single-case design limits the inferential scope of the analysis. The study does not claim to demonstrate the frequency, universality, or causal efficacy of TRIZ-like reasoning in negotiation. Rather, it aims to establish the conceptual feasibility of the TRIZ–negotiation mapping and to develop a sufficiently detailed framework that subsequent empirical and experimental work can systematically test. These limitations are consistent with the theory-building purpose of the research.

## 5. Case Analysis: TRIZ Interpretation of Selected Negotiation Tactics

Ten negotiation behaviors characteristic of the case are analyzed following the four-step framework. Cases are organized by TRIZ separation principle, enabling systematic comparison within and across categories.

### 5.1. Separation in Time

Temporal separation assigns contradictory actions or properties to different moments or phases, allowing a negotiator to alternate between openness and restriction, or between aggression and concession, according to a strategic logic of sequencing.

#### Case 1: Controlled Unpredictability

The deliberate cultivation of strategic uncertainty—through shifting positions, unexpected deadlines, or last-minute reversals—illustrates TRIZ Principle #15 (Dynamics). The underlying contradiction ("be transparent to build trust" versus "be opaque to avoid exploitation") is resolved temporally: transparency and opacity are not realized simultaneously but in sequenced phases. What appears as volatility serves a structural

function: by varying parameters over time, the negotiator delays counterpart adaptation and preserves informational leverage. This behavior aligns with the psychological literature on negotiator unpredictability [44, 46], which notes that commitment to unpredictability can itself be a strategic resource. The TRIZ interpretation adds structural precision: the tactic is not merely random variation but controlled dynamization of negotiation parameters.

#### Case 2: Counterattack Sequencing

A pattern of deliberate delay in responding to challenges—allowing criticism or resistance to develop before launching a targeted counterresponse through public messaging or policy measures—corresponds to TRIZ Principle #9 (Preliminary counteraction). Aggression and cooperation do not coexist at the same moment; assertive moves are temporally separated from conciliatory engagement. This sequential logic has been noted in diplomatic and security contexts [46] and parallels the finding in emotional expression research [3] that strategic timing of negative affect expression can amplify its signaling effectiveness. The temporal separation prevents the perception of reactive aggression and frames the response as deliberate rather than impulsive.

These examples show how the time dimension allows contradictory impulses—confrontation and engagement—to alternate productively. Temporal separation preserves flexibility and leverage while reducing the risk of irreversible trust breakdown.

## 5.2. Separation in Space

Spatial separation distributes contradictory positions across different spaces, roles, or issue domains, allowing a negotiator to appear uncompromising in one arena while remaining cooperative in another.

#### Case 3: The Walk-Away Tactic

Visible withdrawal—leaving meetings, cancelling summits, or publicly declaring negotiations terminated—reflects TRIZ Principle #34 (Discarding and recovery). By physically or symbolically exiting, the negotiator resets power asymmetry and tests the counterpart's dependence on continued talks—a direct manipulation of BATNA perception [22, 28]. The contradiction ("continue dialogue" versus "signal strength through refusal") is resolved spatially: at the institutional level, channels often remain open, while at the personal or leader level, presence is withdrawn. Space thus becomes a medium for communicating resolve without irreversibly severing the relationship. This interpretation extends the game-theoretic concept of credible commitment [46] by specifying the spatial mechanism through which credibility is enacted.

#### Case 4: Multi-Issue Linkage

Linking multiple issues—tariffs, defense cost-sharing, technology, immigration—into a single negotiation package reflects TRIZ Principles #5 (Merging) and #1 (Segmentation) operating in combination. By merging arenas, the negotiator

redistributes tension across a broader negotiation space, creating new combinations of concessions and side-payments—a textbook integrative procedure [31, 44]. By segmenting within that merged space, the negotiator can concede on lower-priority issues while hardening positions on core interests. The spatial distribution of issues across an expanded negotiation landscape reduces the zero-sum character of any single sub-negotiation. This connects directly to the multi-issue negotiation literature [5, 41], which shows that issue linkage is among the most reliable structural routes to integrative agreement.

Spatial manipulation thus functions as a form of architectural design within the negotiation field, preventing direct collision between opposing demands by distributing them across distinct domains.

## 5.3. Separation by Condition

Conditional separation resolves contradictions whose manifestation depends on context, allowing opposing behavioral tendencies to be expressed under different conditions rather than simultaneously.

#### Case 5: Extreme Opening Demands

Opening with strikingly high or unconventional demands—"asking for the maximum"—embodies TRIZ Principle #4 (Asymmetry). The contradiction ("appear reasonable" versus "create ample room for concession") is resolved conditionally: extremity is strategically acceptable at the initial stage when expectations are unanchored and negotiating norms are still being established. As the process unfolds, subsequent moderation of the position is reframed as concession, converting initial perceived aggression into bargaining capital. This tactic is directly supported by the anchoring literature: Galinsky and Mussweiler (2001) [26] demonstrated that first offers anchor final agreements, and that extreme first offers—when within the range of plausibility—improve outcomes for the offering party. The TRIZ framework adds explanatory precision: the extreme opening is not simply aggressive but is a conditional strategy that exploits the norm-formation phase of negotiation to establish a favorable anchor under conditions of high uncertainty.

#### Case 6: Reframing Adversity as Strength

The reframing of setbacks—legal challenges, staff turnover, external criticism—as evidence of toughness, authenticity, or victimization aligns with TRIZ Principle #22 (Blessing in disguise). Under one condition (viewed by adversaries), a situation appears disadvantageous; under another condition (framed for supporters or domestic audiences), the same situation is interpreted as proof of commitment, resilience, or persecution. This conditional transformation of meaning corresponds to what the negotiation and framing literature terms "spin" or "issue framing" [5, 58], but the TRIZ analysis reveals the underlying structural logic: the tactic converts a genuine weakness into a rhetorical asset by selectively activating different interpretive conditions. The connection to emotional

expression research (Sinaceur & Tiedens, 2006) is also relevant: anger and indignation, when attributed to principled grievance rather than weakness, can increase compliance from a motivated counterpart.

Conditional separation thus mirrors the adaptive, context-sensitive logic of negotiation framing. Rather than embodying a fixed posture, the negotiator modulates stance and rhetoric according to audience, timing, and situational cues.

### 5.4. Separation Between Whole and Parts

This principle distributes contradictory features across system levels—between the collective and its components—allowing coherent macro-level behavior to coexist with diverse micro-level tactics.

#### Case 7: Simplified Message Branding

Persistent use of short, repeatable slogans—functioning as overarching strategic narratives—exemplifies TRIZ Principle #26 (Copying). The contradictory requirement ("address complex policy issues" versus "maintain public clarity and mobilization") is resolved through hierarchical separation: at the level of the whole, the message remains simple and reproducible, while at the level of parts, specialized negotiators handle detailed and sometimes nuanced positions. The copy principle enables a modular system of persuasion in which a standardized surface message coexists with differentiated underlying content. This analysis connects to the dual-audience negotiation literature [43, 47], which describes how negotiators must simultaneously manage internal constituencies (the domestic

audience) and external counterparts, often communicating different signals to each.

#### Case 8: Personalized Relationship Management

Tailoring tone, incentives, and symbolic gestures differently to individual counterparts—ranging from personal flattery to public criticism—demonstrates TRIZ Principle #3 (Local quality). Divergent properties exist at the component level: different leaders or executives are addressed with distinct messages and relationship modalities. The overarching strategic position remains broadly consistent (e.g., insistence on trade rebalancing), while relational approaches are locally differentiated. This behavior reflects what negotiation researchers call "relationship management" under multi-party conditions [54] and is consistent with research on personalized persuasion and rapport building [15, 25]. The TRIZ analysis reveals it as a structural design choice rather than merely a personality feature: contradictory requirements for consistency and differentiation are systematically distributed across levels of the system.

Whole-part separation stabilizes the overall system by allowing subsystems to embody contradictory traits, enhancing adaptability across diverse counterparts without requiring revision of the high-level strategic narrative.

### 5.5. Summary of Mappings

Table 2 summarizes the full set of TRIZ mappings across all ten cases, organizing them by separation type and identifying the core physical contradiction resolved by each.

*Table 2. TRIZ-based analysis of ten selected negotiation tactics.*

TRIZ Separation	Inventive Principles	Representative Tactics	Core Contradiction Resolved
Time	#15 Dynamics, #9 Preliminary concentration	Controlled unpredictability; delayed counterattack sequencing	Transparency ↔ Opacity
Space	#34 Discard & Recover, #5 Merging, #1 Segmentation	Walk-away; multi-issue linkage	Engagement ↔ Power Assertion
Condition	#4 Asymmetry, #22 Blessing in disguise	Extreme opening demand; adversity reframing	Credibility ↔ Pressure
Whole/Parts	#26 Copying, #3 Local quality	Message branding; personalized relationship management	Consistency ↔ Differentiation

Across all cases, what might superficially appear as erratic or purely intuitive behavior can be modeled as the systematic application of contradiction-management logic. Rather than violating rationality, the analyzed tactics display a form of structural rationality that deploys contradictions strategically through temporal, spatial, conditional, and hierarchical separation.

From a TRIZ standpoint, these behaviors are interpretable as iterative problem-solving experiments in which the negotiator adjusts system boundaries, timing, and levels of analysis until key contradictions no longer block progress—a process that formally parallels engineering optimization under multiple competing objectives.

## 6. Discussion and Implications

### 6.1. TRIZ and the Prescriptive Gap in Negotiation Theory

The case analysis demonstrates that the TRIZ framework can provide a systematic vocabulary for explaining negotiation tactics that existing descriptive and prescriptive frameworks address only partially. Prescriptive frameworks such as Raiffa (1982) [44] and Fisher et al. (1991) [22] excel at advising negotiators to separate interests from positions, to expand the issue space, and to seek objective criteria—but they do not specify the inventive logic by which a particular contradiction calls for a particular type of creative resolution. The TRIZ mapping goes further: it identifies not just that parties should "be creative" but which separation principle and which inventive pattern are appropriate for a given structural contradiction. This constitutes a prescriptive advance over both purely behavioral accounts and general guidance frameworks.

Importantly, this advance does not displace existing contributions. The anchoring research of Galinsky and Mussweiler (2001) provides robust empirical grounding for Case 5 (extreme demands), showing why extreme opening offers improve outcomes under conditions of uncertainty. The emotional signaling research [49, 59] illuminates the mechanism behind Cases 2 and 6. BATNA theory [22, 28] explains the structural logic of Case 3 (walk-away). Rather than displacing these accounts, the TRIZ analysis integrates them within a unifying contradiction-resolution logic that reveals their shared structural architecture.

At this stage, however, the value of the framework lies primarily in conceptual unification and mechanism specification; questions of empirical prevalence and comparative predictive validity remain for future research.

### 6.2. Relationship to Game-theoretic Approaches

Game theory and TRIZ address complementary aspects of negotiation. Formal game-theoretic models—Nash (1950) [37], Rubinstein (1982) [45], mechanism design (Myerson, 1984) [36]—characterize equilibrium outcomes given fixed preference structures and information conditions. They answer the question of what rational players will do if the game is fully specified. TRIZ, by contrast, addresses the prior question of how the game structure itself can be creatively redesigned: how issues can be merged, separated, linked, or timed in ways that transform an apparent deadlock into a mutually acceptable configuration.

These perspectives are complementary rather than competing. A negotiator can use game-theoretic analysis to understand the equilibrium properties of a given agreement structure, and TRIZ logic to generate alternative structures that shift the equilibrium in a preferred direction. Behavioral game theory [11]—which incorporates psychological factors such as fairness concerns and reference-point effects—provides an additional layer that TRIZ does not address: the emotional and social norms that constrain which inventive moves are perceived as legitimate. A fully integrated theory of negotiation design would ideally combine game-theoretic rigor, behavioral realism, and TRIZ-based inventive reasoning.

### 6.3. TRIZ Compared to Other Creativity Frameworks

The systematic comparison with alternative creativity frameworks (Section 2.2.2) supports the selection of TRIZ but also reveals its specific scope conditions. Brainstorming and lateral thinking are superior to TRIZ as divergent ideation tools when the problem is poorly defined and the space of possibilities needs to be broadly explored. Design Thinking is superior when user empathy and iterative prototyping are central to solution development—conditions that characterize product and service innovation more than adversarial negotiation. SCAMPER is simpler and faster to apply but lacks the contradiction-specific diagnostic logic that TRIZ provides.

TRIZ is most appropriate when the problem structure can be partially formalized—when specific contradictions can be identified, and when the goal is to generate solutions that satisfy both sides of the contradiction rather than simply moving along a trade-off curve. Negotiation regularly presents such conditions, particularly in the design of agreement architectures: issue linkages, process rules, timing sequences, and organizational roles. For the more relational, emotional, and identity-laden dimensions of negotiation—values, history, recognition, face-saving—the procedural and empathetic approaches of Design Thinking and principled negotiation [11] remain more directly applicable.

### 6.4. Toward Negotiation Engineering: A Conceptual Model

Building on these observations, the study proposes Negotiation Engineering (NE) as an integrative paradigm that applies TRIZ logic to the cognitive, strategic, and structural layers of negotiation. Table 3 summarizes the conceptual architecture of NE across five analytical stages.

*Table 3. Conceptual architecture of Negotiation Engineering.*

Stage	Analytical Function	TRIZ Equivalent	Negotiation Application
1. Contradiction identification	Detect competing goals or	Physical contradiction	"Agree vs. maximize" and

Stage	Analytical Function	TRIZ Equivalent	Negotiation Application
	pressures	definition	related dilemmas
2. Conflict mapping	Specify dimensions of conflict	Four separation principles	Diagnose when and where contradictions coexist
3. Solution abstraction	Select inventive principle patterns	40 inventive principles	Identify archetypes of creative strategic behavior
4. Tactical design	Translate patterns into concrete behaviors	Design embodiment	Develop playbooks, training simulations, real-time scripts
5. Evaluation and feedback	Assess outcomes and refine patterns	Algorithm optimization	Continuous learning of negotiation pattern effectiveness

This model integrates TRIZ's systemic reasoning with the interpretive depth of behavioral and negotiation research. By visualizing negotiation as a contradiction-resolution engine, practitioners can design, test, and refine strategies empirically, converting individual intuition into shared, learnable patterns. The NE perspective shifts analytical focus from "how people feel or react" to "how systems of interaction resolve logic-based tension"—a complementary rather than competing emphasis relative to the psychological tradition.

The NE framework also accommodates the partial applicability of TRIZ that is inherent in negotiation. TRIZ is most effective for elements that admit engineering-like formulation: quantifiable trade-offs, option packaging, process sequencing, and role differentiation. Issues involving values, identity, deep relational history, or political symbolism resist such formalization. A hybrid architecture—TRIZ-based analytical tools for the formalizable segments of negotiation, human dialogue and empathetic process for the non-formalizable—defines the practical template for Negotiation Engineering. This division mirrors the broader insight from operations research and behavioral economics that human-algorithm complementarity, rather than substitution, produces the best outcomes in complex decision environments.

### 6.5. Educational and Practical Applications

The TRIZ-based negotiation framework yields implications for education and practice. In management education, negotiation curricula can integrate contradiction identification exercises, guiding students to treat paradoxes as structured problem-solving opportunities. Engineering and management programs can collaborate on Negotiation Engineering courses or modules that explicitly combine system design perspectives with behavioral modeling, responding to the broader move toward STEAM-oriented education. For practitioners, TRIZ contradiction diagnostics can assist mediators and negotiators in identifying structural sources of deadlock and generating novel agreement architectures before retreating to compromise.

Computationally, TRIZ principles can be embedded in decision-support tools and AI-assisted negotiation platforms to generate structurally coherent options on the formalizable parts of a dispute—an application that connects to emerging work on multi-agent TRIZ implementations [53]. In such hybrid systems, algorithmic modules generate option packages while human negotiators concentrate on relational, ethical, and political dimensions. The possibility of partial automation of the contradiction-to-principle mapping step—using trained models to rapidly scan the contradiction matrix—offers a promising direction for near-term practical development.

For example, in a professional training program for trade negotiators, participants could be asked to identify a contradiction such as the need to demand short-term price concessions while preserving a long-term supplier relationship. They could then classify the contradiction, select the relevant separation principle, map it to a TRIZ inventive principle, and translate it into a specific bargaining tactic. Such an exercise would help practitioners move from intuitive judgment to structured negotiation design.

### 6.6. Theoretical Implications

At the theoretical level, the TRIZ–negotiation synthesis contributes to several ongoing discourses. First, it broadens the notion of rationality in negotiation by highlighting inventive rather than purely optimizing logic: rather than assuming actors maximize utility within fixed constraints, the framework emphasizes their capacity to redesign constraints through contradiction resolution, echoing Simon's (1969) [48] notion of design as a distinct mode of reasoning. Second, it complements paradox and duality theories in management [40, 50] by providing an operational methodology for working with tensions: TRIZ offers concrete tools for decomposing, distributing, and leveraging paradoxes that the paradox literature typically characterizes at a higher level of abstraction. Third, it advances cross-domain knowledge transfer by demonstrating that formal methods from engineering science can enrich social science frameworks, reinforcing the role of design thinking in management research.

## 7. Conclusion

### 7.1. Summary of Findings

This study conceptualized negotiation as a structured process of contradiction resolution by applying TRIZ to the analysis of negotiation strategy. It argued that core negotiation dilemmas can be formally modeled as physical contradictions, and that TRIZ's four separation principles—in time, in space, by condition, and between whole and parts—provide a systematic framework for explaining how effective negotiators manage these opposing forces. The empirical illustration, using ten tactics drawn from an extreme-case analysis, suggests that behaviors commonly labeled as intuitive or idiosyncratic may exhibit structural patterns consistent with TRIZ logic. The study also situated TRIZ within the broader landscape of creative problem-solving frameworks, argued for its specific advantages in the negotiation context, addressed its relationship to game-theoretic approaches, and proposed a five-stage Negotiation Engineering model with implications for theory, pedagogy, and practice.

### 7.2. Theoretical Contributions

The research aims to make three main contributions. These contributions are primarily conceptual: they clarify, integrate, and extend existing perspectives rather than offer causal tests of effectiveness. First, it formalizes paradox logic in negotiation by using TRIZ's contradiction-resolution theory to redefine negotiation as a rule-governed creative process, going beyond heuristic improvisation while complementing existing prescriptive frameworks. Second, it provides an interdisciplinary synthesis bridging engineering design and social negotiation, offering a shared ontology for innovation and conflict management. Third, it develops a pedagogical framework introducing an analytic toolset for negotiation training that enables learners to internalize pattern-based reasoning and transfer it across contexts and cultures.

### 7.3. Limitations

Several limitations must be acknowledged. Given the single, extreme-case design, the findings should be interpreted as analytic generalizations about contradiction-resolution patterns, rather than statistical generalizations about negotiators in general. The study therefore offers an existence proof of TRIZ-consistent negotiation logics, while leaving questions of prevalence and boundary conditions to future empirical work. The qualitative coding procedure lacked independent blind raters and formal inter-rater reliability assessment. Because all coding was conducted by a single author, the internal consistency of the mappings reflects theoretical coherence rather than independently verified reliability. The analysis remains predominantly descriptive and theoretical, without statistical testing of TRIZ-tactic correspondences or experimental validation of

the proposed mappings. The study does not include statistical tests linking specific TRIZ principles to negotiation outcomes; establishing such links requires experimental or large-sample designs beyond the scope of this article. TRIZ is inherently partial in its applicability to negotiation: it is most effective for structurally formalizable elements (quantitative trade-offs, process design, issue linkage) and less suited to the relational, emotional, and identity-laden dimensions that characterize the most challenging negotiations. TRIZ should therefore be seen as one component in a multi-method toolkit for negotiation and conflict management, rather than as a stand-alone methodology. Accordingly, the present findings should be interpreted as analytic generalizations about possible contradiction-resolution logics, rather than as statistical estimates of how frequently such logics occur in practice. The paper has also addressed only a subset of TRIZ's 40 inventive principles, and the selection of specific principles over others would benefit from more explicit justification and comparative analysis in future work. Taken together, these limitations indicate that the present article should be read as a framework-building study that specifies mechanisms and propositions for subsequent validation, rather than as a definitive empirical test of TRIZ-based negotiation theory.

### 7.4. Future Research Directions

Several directions merit pursuit. Comparative studies should apply the TRIZ-based framework to other negotiators, organizational types, and cultural contexts to assess which contradiction patterns are universal and which are context-specific. Field or survey studies could statistically examine whether the proposed TRIZ patterns predict perceived effectiveness of negotiation tactics across different cultural and organizational settings. Experimental research should test whether training in TRIZ contradiction analysis improves negotiation performance relative to control conditions or established methods. Subsequent work could employ controlled experiments in which participants are trained in TRIZ-based contradiction analysis and their negotiation outcomes are compared to those receiving standard negotiation training. Multi-coder studies should develop and validate formal coding schemes for TRIZ-tactic mapping, enabling replication and inter-rater reliability assessment. Computational modeling should encode TRIZ principles in multi-agent simulations and AI-assisted platforms, exploring hybrid human-machine architectures for option generation in complex negotiations. Cross-theoretical integration with paradox management theory [50], behavioral game theory [11], and design thinking should develop a more comprehensive model of strategic creativity under conditions of structural tension.

The present article is intended as the conceptual foundation for a subsequent, more empirically focused study that will conduct a systematic, multi-case TRIZ-based analysis with formal coding procedures and multiple raters. Together, these

studies are intended to move the research program from theory-building toward systematic empirical validation of Negotiation Engineering as a potentially useful framework for scholarship and practice.

## Abbreviations

TRIZ	Theory of Inventive Problem Solving
BATNA	Best Alternative to a Negotiated Agreement
BMI	Body Mass Index
NE	Negotiation Engineering

## Author Contributions

**Jae Yup Chung:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

**Chang Yong Song:** Conceptualization, Methodology, Writing – review & editing

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## Conflicts of Interest

The authors declare no conflicts of interest.

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## Biography



**Jae Yup Chung** is an Assistant Professor in the Department of International Trade at NamSeoul University in Cheonan, Republic of Korea. He received his PhD in Business Administration with a concentration in International Management, specializing in negotiation, and holds previous graduate degrees in management-related fields. His current research focuses on international trade and customs, negotiation theory and practice, and the application of innovation and problem-solving frameworks (such as TRIZ) to negotiation and business strategy. Dr. Chung has published in both Korean and international journals and frequently participates in academic conferences and collaborative projects in trade, management, and negotiation. Alongside his academic work, he is active as a columnist and essayist, writing on business, culture, and music.



**Chang Yong Song** is an Associate Professor in the Department of Culture and Tourism Management at Halla University in Wonju, South Korea. He received his Ph.D. in Industrial Engineering from KAIST, specializing in business strategy and production management. His current research areas include behavioral engineering, TRIZ, and local branding strategy. Professor Song has published papers in domestic and international academic journals and actively participates in academic conferences and collaborative research in the fields of tourism, management, and creativity.

## Research Field

**Jae Yup Chung:** International business strategy, Negotiation theory and practice, Behavioral decision making, Cross cultural negotiation, Business diplomacy, Innovation and conflict management

**Chang Yong Song:** Business Strategy, Creative Problem Solving, Local Content Branding, Service Design, Behavioral Engineering, Application of TRIZ in Business