



Inventive Principles of TRIZ with 36 Strategies

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What are 36 Strategies? 三十六计

- ▶ The 36 strategies are a collection of some of the most subtle and counter-intuitive strategies developed in ancient China.
- ▶ 36 strategies, was first mentioned in the *Book of Southern Qi* (479 to 502 AD).
- ▶ The only existing known hard copy that describes the original 36 strategies was discovered in 1941.
- ▶ There are many sources for these 36 strategies, they include: *I Ching (Book of Change)* and *Art of War*, and many others dating back up to 3000 years

Motivation of this research

- ▶ Link and compare inventive TRIZ principles with other existing strategies and approaches in non technical area
- ▶ Discover whether there are common links among "fundamental and universal principles of human wisdom and creativity" from different schools of thoughts

The main objective of the 36 strategies

- ▶ "There are many issues in warfare, such as strengthening armed forces, choosing officers, planning the wars, etc., we can certainly follow some standard practices. But there will be infinite variations, surprises, uncertainties when war really happens, 36 strategies can be tried out to deal with all that whenever you are in advantageous or disadvantageous position– *36 strategies* (1941)
- ▶ 夫战争之事，其道多端。强国、练兵、选将、择敌、战前、战后。一切施为，皆兵道也。惟比比者，大都有定之规，有陈便可循，而其中变化万端，诡谲奇譎，光怪陆离，不可捉摸者，厥为对战之策。三十六计者，对战之策也，诚大将之要略也。闲尝试之：胜战，攻战，并战之计，优势之计也；敌战，混战，败战之计，劣势之计也

Structure of 36 Strategies

- ▶ *“Six times six equals thirty six, calculations produce tactics and tactics yield more calculations. Based on this correlative relationship, ploys and strategies are devised. Strategies can never be prescribed without adjustments; rigid application of theory will result in failure.”*
- ▶ 六六三十六，数中有术，术中有数。阴阳燮理，机在其中。机不可设，设则不中
- ▶ The 36 strategies are divided into six sections (6x6)
 - ▶ Winning
 - ▶ Enemy dealing
 - ▶ Attacking
 - ▶ Chaos
 - ▶ Proximate
 - ▶ Defeat

Example of 36 Strategies –Winning

- ▶ **Strategy 3: Kill with a Borrowed Knife** 借刀杀人
- ▶ **Key Points**
 - ▶ Damage or eliminate the opponent by using the force of others.
 - ▶ Damage the opponent in an indirect manner without drawing negative effects.
 - ▶ Use third party or other means to accomplish the job without cost.
- ▶ **Examples**
 - ▶ Enemy's enemy is the friend.
 - ▶ Using insects to fight harmful insects.
 - ▶ To prevent pollutants, exhaust gas from thermal power stations is treated with alkaline chemicals. The alkaline slag is recovered from a coal burning power station. Where the slag had also been a source of pollution.
- ▶ **Relevant TRIZ Principles**
 - ▶ Principle 25: Self service
 - ▶ Principle 22: Turn harm into benefit

Example of 36 Strategies –Enemy Dealing

- ▶ **Strategy 11: Sacrifice the Plum Tree in Place of the Peach** 李代桃僵

There are circumstances where an individual must sacrifice short-term objectives in order to gain the long-term goal.

- ▶ **Key points**

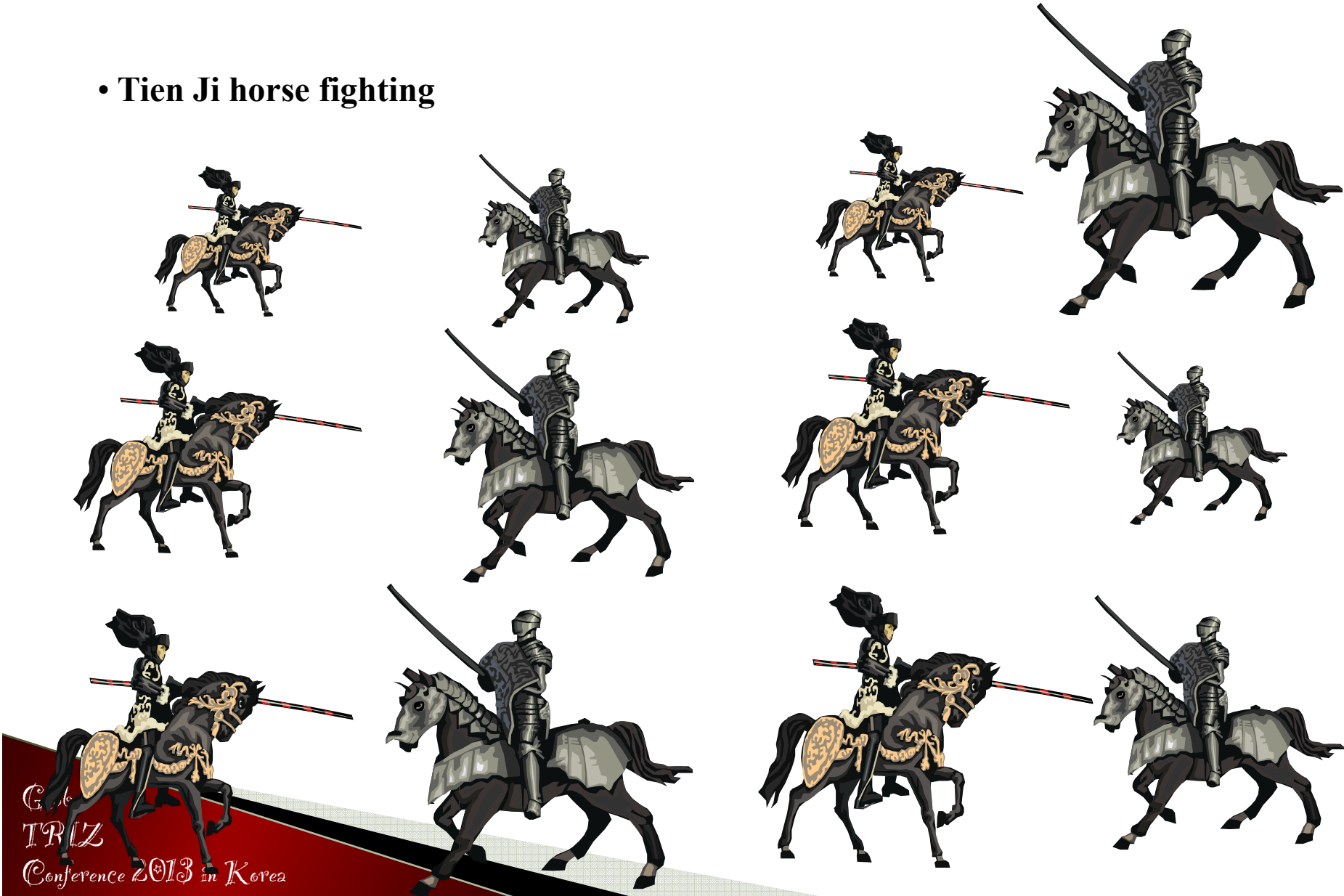
- ▶ Take a small sacrifice to avoid a big loss or exchange a big gain.
- ▶ Sacrifice short-term objectives in order to gain the long-term goal

- ▶ **Relevant TRIZ Principle**

- ▶ Principle 4: Asymmetry

Application Examples

- Tien Ji horse fighting



Example of 36 Strategies –Attacking

- ▶ **Strategy 18: To Catch the Bandits, First to Catch the Ringleader (Decapitation Strategy) 擒賊擒王**
- ▶ **Key points**
 - ▶ In order to win, an individual has to attack the core of the problem.
 - ▶ When there is a problem, fighting the symptoms is far less effective than removing the root cause.
- ▶ **Examples**
 - ▶ Root cause analysis, Shainin's red "X"
 - ▶ The American's first Gulf War strategy was to remove the command and communication centers through air attack.
 - ▶ Toyota's "five ways" approach to discover the most important root cause.
- ▶ **Relevant TRIZ Principle**
 - ▶ This strategy is related to the function analysis approach of TRIZ to identify the zone of conflict and to identify the vulnerability of the system.

Example of 36 Strategies –Chaos

▶ Strategy 23: Befriend to a Distant Enemy and Attack Ones Nearby 远交近攻

Let us proceed with caution, concentrating our strength, and add to it daily by winning over to our side those barons who are vassal of the enemy. Then, When the enemy stands alone, like a tree shorn of its leaves and branches, we will attack and destroy the root

--Toyotomi Hideyoshi 豊臣秀吉

In around 300 B.C., Qin is the strongest state in China, the emperor's advisor Proposed this strategy to the emperor.

- ▶ Key points
- ▶ When an individual is not as strong as his opponents, fight with the ones that are easy to win first, gaining strength in the process.
- ▶ Establish a temporary truce with stronger, more powerful or long-term opponents and leave the hard fight for later – after becoming stronger.
- ▶ Examples
- ▶ The process from a low cost competitor to a full scale competitor.
- ▶ Relevant TRIZ Principle
- ▶ The distance-time-cost tool in TRIZ and functional analysis share some common thoughts with the Honda strategy.

Example of 36 Strategies – Proximity

▶ Strategy 25: Replace the Beams with Rotten Timbers

偷梁换柱

In the *Art of War*, Sun Tzu said: *"The generals are the supporting pillar of the state. If their talents are superior, the state will be strong. If the supporting pillar is marked by fissures, the state will grow weak."*

▶ Key points

- ▶ Disrupt the enemy's formations, interfere with their methods of operation.
- ▶ Change the rules they are used to following. Go contrary to their standard training in this way. Remove the supporting pillar, the common link, which makes a group strong.
- ▶ Replace the enemy's main pillar with inferior parts.

▶ Examples

- ▶ The Soviet spies secretly changed a screw on the opponent's U-2 plane to make it show a higher altitude. Later the U-2 plane was brought down by a regular missile as it was not flying at the altitude it expected.
- ▶ Launch disruptive innovation to change the rules of the game in the marketplace.

▶ Relevant TRIZ Principle

- ▶ Principle 35: Parameter change

Example of 36 Strategies – Defeat

▶ Strategy 36: If Everything Else Fails, Retreat 走为上

In the *Art of War*, Sun Tzu wrote: *"If greatly outnumbered then retreat. While it is possible for a small force to put up a great fight, in the end it will lose to superior numbers."*

In *The Thirty Six Strategies* this strategy is explained as: *"When your side is losing there are only three choices remaining: surrender, compromise or escape. Surrender is complete defeat, compromise is half defeat, but escape is not defeat. As long as you are not defeated, you still have a chance."*

▶ Key point

▶ If it becomes obvious that the current course of action will lead to defeat then retreat and regroup.

▶ Relevant TRIZ Principles

▶ There are no relevant TRIZ principles.

Example of 36 Strategies –Several Others

- ▶ Strategy 6: Clamor in the East, Attack in the West 声东击西
- ▶ *The spot where we intend to fight must not be made known, for then the enemy will have to prepare against a possible attack at different points and his force will be then spread out too thin.* *Art of War: Sun Tze*
- ▶ Key point
 - ▶ Using uncertainty to weaken opponent's preparedness
 - ▶ Using false signal to let opponent making wrong judgment
 - ▶ Using uncertainty to force opponent to spread out its force and resource
- ▶ Examples
 - ▶ WWII, the Allied forces fooled Germans by pretending to attack using the English channel, when actually they landed in Normandy.
 - ▶ In the 1991 Gulf War the coalition through military deception was able to convince the Iraqis that the coalition intended an amphibious attack into Kuwait and was able to fix Iraqi forces in positions that could play no effective part when the real attack came.
- ▶ Relevant TRIZ Principles
 - ▶ Principle 9: Preliminary anti-action
 - ▶ Principle 10: Preliminary action

Example of 36 Strategies –Several Others

- ▶ Strategy 12: Seize the Opportunity to Lead a Sheep Away 顺手牵羊

While following the rules of the strategy and tactics, be prepared to take advantage of circumstances not covered by conventional thinking. If the opportunities present themselves, then the leader should be flexible in his plans and adapt to the new circumstances.

Art of War: Sun Tze

- ▶ **Key point**

- ▶ Pay attention to all unexpected events, take advantage of all opportunities to our benefits
- ▶ Even the small opportunities are worth getting, because the things will add up
- ▶ We need to seize the opportunity quickly and decisively

- ▶ **Examples**

- ▶ Pfizer was experimenting a research drug to prevent the constriction of blood vessels, but during human subject trial, it discovered its 'side effect', actually that becomes later Viagra.
- ▶ Japanese Inventor Momofuku Ando unintentionally noticed that people were waiting in long line to buy noodle soup as breakfast. He noticed that restaurants' noodles taste good but need a long waiting time and are expensive; packaged noodles are cheap but not tasty and take too long to cook. He thought about a noodle with spice bags and can be cooked with hot water only. He seizes this idea and invented instant noodle.

- ▶ **Relevant TRIZ Principles**

- ▶ Principle 21: Skipping (Only partially)

Example of 36 Strategies –Several Others

- ▶ **Strategy 14: Borrowing a corpse for the soul's return** 借尸还魂
- ▶ **Key point**
- ▶ Take an institution, a technology, or a method that has been forgotten or discarded and reformulate it for your own purpose
- ▶ Revive something from the past by giving it a new purpose or to reinterpret and bring life to old ideas, customs, traditions etc
- ▶ **Examples**
- ▶ Re-use old brand and makes
- ▶ On Feb 14 in ancient Rome, people would send flowers in honor of goddess Juno,
- ▶ now florist and gift companies market the same day as “Valentine’s Day”
- ▶ During the competition between Microsoft and Apple in early 1980s, Microsoft used their window software (Soul) to put a new life for the “obsolete” IBM PC computers (Corpse).
- ▶ **Relevant TRIZ Principles**
- ▶ Principle 22: Turn harm into benefit
- ▶ Principle 34: Discarding and recovering

Example of 36 Strategies –Several Others

- ▶ Strategy 19: Remove the firewood under the pot 釜底抽薪
Chinese proverb said:” *When you have boiling water in the pot, adding cold water will not cool it down effectively, but removing the firewood will.*“ In *36 Strategies* book (Xinghua 1941), the explanation is;” *Fire is the strongest “yang”, it is hard to fight, however, the source of fire is wood, it is “ying’, and it is easy to remove. Removing this source is the easiest way to fight fire*”.
- ▶ Key point
- ▶ It is wise not to fight something powerful directly, but to undermine its foundation and remove its source of power
- ▶ Examples
 - ▶ Trade embargo
 - ▶ Choke off oxygen to eliminate fire
- ▶ Relevant TRIZ Principles
- ▶ None

Similarities Between TRIZ and 36 Strategies

- ▶ **Common Goals: Ideal Final Result**

$$\text{Ideality} = \frac{\sum \text{Benefits}}{\sum \text{Costs} + \sum \text{Harm}}$$

- ▶ "create something from nothing", "Kill with a borrowed knife"
- ▶ **Eye Openers for Unusual Solutions**
- ▶ **Optimal Uses of Resources**
- ▶ **Psychological Inertia**

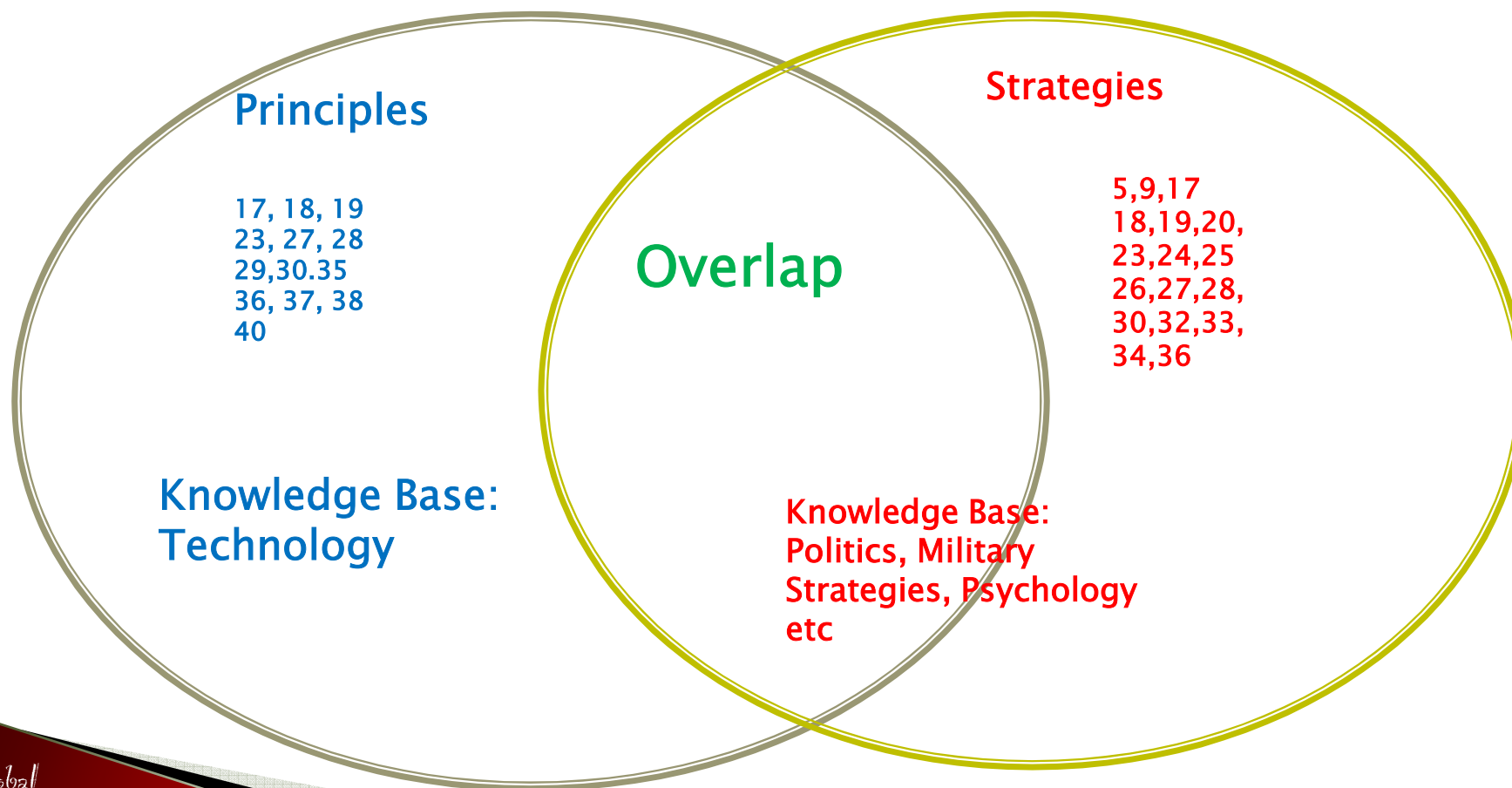
Differences Between TRIZ and 36 Strategies

- ▶ **Domains of Knowledge Base**
 - ▶ TRIZ: Technology
 - ▶ 36 Strategies: Battlefield tactics, political and diplomatic practices, business operations, psychological warfare
- ▶ **Application Method**
 - ▶ TRIZ: contradiction matrix.
 - ▶ 36 Strategies: pick and choose the ones that may fit your situation

Differences Between TRIZ and 36 Strategies

40 Inventive Principles

36 Strategies



Questions?



<http://www.triz-journal.com/archives/2010/01/02/>