

# “Hidden Goals”: a Game Teaching Conflict Resolution

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## Abstract

Here, we introduce our game “Hidden Goals” developed to teach various players conflict resolution. The paper is in three parts. First, the theoretical background of the game is introduced. The game is based principally on the theory of tacit bargaining (Schelling, 1960). Second, learning objectives are introduced in terms of game development. The game is based on the popular Japanese game “Shihi-narabe”, which is a variant of the traditional Chinese game “Fan Tan” that features 52 playing cards. Third, the results of a case study are described to show readers (in general) how to play the game (we continue to accumulate data and will expand the applications of the game). The implications and limitations of the game are also discussed.

*Keywords: game, conflict resolution, tacit coordination, consensus building*

## Introduction

We introduce our educational game “Hidden Goals” that teaches various players how to resolve conflicts of interest using a step-by-step approach. The game consists of several phases; rules are sequentially added. Players learn the importance of co-operation, communication, and conflict resolution. Conflicts occur when the interests and desired outcomes of interdependent parties/individuals are either incompatible or perceived as such. Such issues arise constantly both in daily life and international diplomacy. For example, conflicts often develop between those who advocate economic growth and environmental protection. Their behaviors and attitudes toward the environment seem to be completely different. Also, international conflicts are commonplace. The causes of conflicts differ; resolutions must thus also differ. If a conflict concerns the distribution of limited resources, increasing the levels of resources may be a useful solution. For example, if inadequate water is available from only a few wells, digging of new wells would be a reasonable solution.

During game development, we focused on the psychological aspects of conflict, thus, on perceptions of conflict and communication rather than conflicts attributable to management of scarce resources. Even when resources are adequate, people do not always co-operate if they fail to understand the situation. People tend to be competitive, seeking to acquire what they can get. In addition, formation of common goals among groups or individuals is difficult. Confrontation may prevent efforts to set compatible

goals or to identify common goals. In other words, any suggestion that competition is in play automatically induces people to interpret the situation as a zero-sum scenario; the real situation is not carefully considered. Lack of, or insufficient, communication increases the problem. In summary, from the psychological perspective, one effective way to resolve conflict is to reframe a situation, substituting compatibility for incompatibility; groups and individuals may thus change their mindsets.

The above discussion is based on a pivotal study on the social psychology of intergroup conflict (Sherif et al., 1961). Experimentally, the introduction of superordinate goals for two previously conflicting groups reduced conflict. Superordinate goals are goals that can be achieved only if different groups co-operate. The implication is that when common goals are set, groups may co-operate, thus resolving conflicts.

We seek to change perceptions of, and resolve, conflict via gaming and simulation. We premise that conflicts are resolvable if the interested parties accept that their interests are compatible and that they share common goals. In other words, we aim to change the mindsets of groups/individuals.

The game is based on the Schelling (1960) concept of bargaining, especially tacit bargaining. As Schelling wrote: "Pure conflict, i.e., two antagonists are completely opposed, is a special case," and, "There are common as well as conflicting interests among the participants" (p. 4). In the context of international affairs, Schelling finds both mutual dependence as well as opposition. In such situations, "gaining", not "winning", may be attained by bargaining, mutual accommodation, and avoidance of mutually damaging behavior (p. 5). By focusing on the common interests and mutual dependence of participants in conflict, Schelling considers that most conflict situations are essentially bargaining scenarios. Viewing a conflict as a bargaining process has the advantage that people will no longer be exclusively preoccupied with either the conflict or the common interest (pp. 5-6); this "emphasize[s] that, in addition to the divergence of interest over the variables in dispute, there is a powerful common interest in reaching an outcome that is not enormously destructive of values to both sides".

Schelling distinguishes two types of bargaining: explicit and tacit. During explicit bargaining, a group or an individual offers concessions to adversaries. In contrast, during tacit bargaining, "adversaries watch and interpret each other's behavior, each aware that his own actions are being interpreted and anticipated, each acting with a view to the expectations that he creates" (p. 21). During tacit bargaining, communication is incomplete or impossible, as bargaining occurs inside the heads of the bargainers. Metacognitions between interested parties or individuals assume priority.

Although Schelling's book focuses principally on international negotiations and resolution of wars, "tacit bargaining" is broadly applicable to conflict resolution. The examples of which are: prisoners' dilemma game (Lawler and Ford, 1996) and common everyday experiences (Bacharach and Lawler, 1980). Our daily communications and negotiations are not totally explicit; we do not necessarily deliver what we think and may misunderstand what we hear. Thus, much of our bargaining is tacit. The reason why people find it difficult to recognize compatible interests may be that communication is incomplete even in intimate relationships. Acceptance of this fact is a good starting point when seeking to resolve conflicts; gaming and simulation may assist.

## The game “Hidden Goals”

In this section, we explain the game “Hidden Goals” in terms of the learning objectives (conflict resolution).

We developed the game in two steps. First, we adopted the popular Japanese game termed “Shichi-narabe”, which uses a 52-card pack. Shichi-narabe is assumed to be a derivative of the Chinese game “Fan Tan”, which is, in turn, a variation of the game known as Sevens, (Card) Domino, or Parliament. Second, we introduced an “invisible player” and “hidden goals” to the game.

Morehead et al. (1991) describes Fan Tan as follows: The game uses a 52-card pack of cards; 3–8 players can participate. The object of the game is to be the first to get rid of all cards. The first player must play any seven face-up on the table. No card can be played until the first seven is laid on the table. The following players must in turn play either a seven, or the next higher or lower card of a suit sequence, to build up four rows of 13 cards of the same suits from the ace at the extreme left to the king at the extreme right. After a player wins, the other players must place a chip in the pool and the winner takes the entire pool.

The rules of Shichi-narabe differ from those of Fan Tan in three major aspects. First, Shichi-narabe does not use chips. Second, players lay out all the sevens before the first card is played (Figure 1). The player with the seven of diamonds is the first player. Third, each player can pass up to three times per game. This allows a player to strategically block other plays by withholding a card required by the layout. In addition, some local rules are applied, one of which we included. We regarded aces and kings as continuous numbers, which should thus be played successively. Figure 2 shows an example of this situation. After a king is played, no card can be played below the seven.

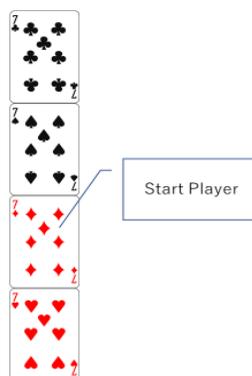
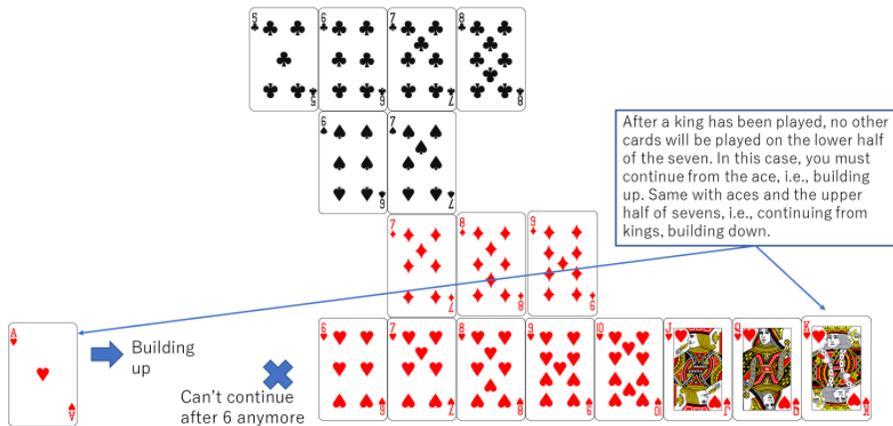


Figure 1 Layout of the cards at the beginning of the game.



**Figure 2 Example of a local rule: After a king or an ace is played, you must play an ace or a king, respectively.**

Players must continue from the ace (i.e., building up). The same is true when an ace is played in terms of the upper half from the seven (i.e., play must continue from the king, thus building down). This rule enhances strategic play.

In addition, we added two rules in a stepwise manner. First, we introduced an “invisible player” (Sugiura and Mikami, 2018: “An application of the “invisible player” rule to environmental education”; see also Sugiura, 2015). The invisible player is absent but assumed to be present. Her/his cards are laid face-up on the table; all real players see them at all times during play. The invisible player plays in turn as do the real players, but the cards to be played are chosen by real player consensus. Second, we introduced the common goal that the invisible player must win. The human players must collaborate and co-operate to this end. Third, we introduced different individual player goals at the beginning of the game. These goals were written on cards given to each player and held secret until the game ended (the goals are listed in Table 1). Therefore, the goals were “hidden”. There were five goals, randomized as were the playing cards. It is always possible that some players might have the same hidden goals. In addition, some goals are mutually compatible. For example, the goal: “Let the invisible player win” does not clash with the goal of “Avoid winning”. In such a case, two players with these goals can both achieve their desired outcomes. For reference, a summary rule comparison is shown in Table 2. Game flow is shown in Figure 3 and the game is fully described in the Appendix.

**Table 1. The hidden goals described on the cards.**

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Let the invisible player win.

Win.

Avoid being a tail-ender.

Avoid winning.

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Ensure that the invisible player is not a tail-ender.

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**Table 2. Comparison of various rules.**

Fan Tan (Domino)	Shichi-narabe	Hidden goals
Number of players: 3–8	Number of players: 4–5	Number of players: 5–6 including 1 “invisible” player.
A player has to pay chips when s/he is unable to play. S/he must pay three chips to the pool, and if a player passes when s/he can play. All players except the winner pay 1 chip to the pool at the end of the game. The winner gets all chips in the pool.	No chip is used.	No chip is used.
Game starts by playing of a seven.	All sevens are placed on the table face up before the game starts.	The same as “Shichi-narabe”.
Players cannot pass if they hold cards to play.	Players are allowed to strategically pass up to three times.	The same as “Shichi-narabe”.
No equivalent rules.	No equivalent rules.	One invisible player joins the game and his/her cards are face-up at all times.
No equivalent rules.	No equivalent rules.	After introduction of the invisible player, each player is given two stepwise goals. First, they are given a common goal. Then, they are given different individual hidden goals.

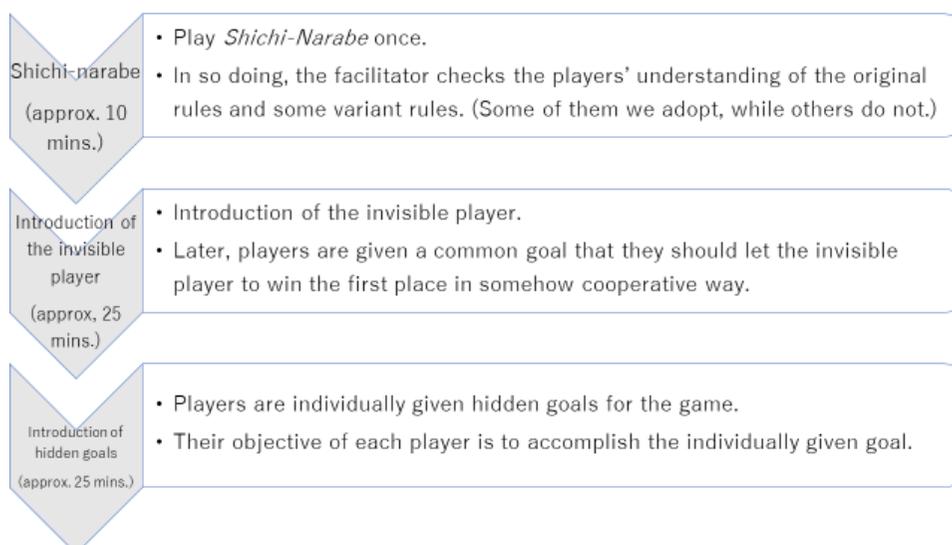


Figure 3 Game flow

### The Learning objectives of “Hidden Goals”

The rules of the game were gradually changed, thus varying the learning objectives. *Shichi-narabe* is very competitive. Players can strategically use their passes to block other players by refusing to lay a card connecting existent cards. The game remains competitive when the invisible player is introduced. Her/his hand is visible to all real players. Therefore, the real players can exploit this knowledge to their own benefit. For example, when a real player has the three of diamonds and the invisible player the four of diamonds, the real player can seek to persuade the other players that the invisible player should next play the four of diamonds. If this suggestion is successful, the real player can next play the three of diamonds. Although retaining competition, the modified game requires some communication among real players, who must reach a consensus as to what the invisible player will play. Most human players exploit the hand of the invisible player, attributable to information asymmetry (i.e., human players hide their cards, but the invisible player's hand is always visible). Thus, human players exploit the invisible player.

After introduction of the common goal: “The invisible player should win,” the game changes drastically. Players engage in continuous earnest discussion as to how the invisible player can win. Exploitative behavior is minimal or absent. Sometimes, players “pass” to ensure that they do not win. The game becomes rather co-operative.

Next, hidden goals were assigned by distributing prepared cards. Players must now seek to achieve their own goals (Table 1). For example, for the goal: “Avoid winning”, if the player becomes a “loser” in the normal sense, s/he achieves the goal. In this case, s/he is “one” of the winners. Now, several players can simultaneously achieve their goals, allowing of several winners in each game.

When the hidden goals are distributed to players, they are told by the facilitator that the goals are “different” and are to be kept secret. Use of the adjective “different” encourages players to believe that their goals are “competitive”. We deliberately use

“different” when facilitating a game; the word serves as a psychological trap. As mentioned above, some goals are mutually compatible; others are not. Later (during debriefing), players note how their mindsets or delusions were affected by the manipulative terminology, and realize that some goals were mutually compatible, affording insights into conflict resolution.

### Case study: Response from the university students

We have run the game several times in university classes. Here, we report the results from one class of 41 students played in a university in Tokyo, Japan, in 2018. We continue to accumulate and analyze data; our initial interpretations are tentative. In addition, the data are qualitative (words used during debriefing). First, we counted keywords appearing after introduction of the invisible player (Table 3). The debriefing question was: “When you tried to let the invisible player win, what changes occurred in the game play?” As shown in Table 3, co-operative behavior increased, as expected. Interestingly, and unexpectedly, planning behavior also increased. Thus, players planned several moves ahead (including moves by the invisible player); mental simulations were common. In addition, passes were strategically used to prevent a win by a human player. Such behaviors can be interpreted as co-operative. Some players mentioned that they initially exploited the invisible player, but when the common goal was introduced, they prioritized attention to her/him because s/he could not voice opinions. This can be interpreted as increased societal awareness/co-operation; we should pay attention to people who have few or no opportunities to express opinions.

Second, after hidden goals were introduced, we asked the students how they resolved the associated conflicts. They offered many written solutions; we counted keywords (Table 4). Many students emphasized the importance of consensus/communication and compromise. Differences between the majority view and minority opinions were also frequently noted, in line with our view that players began to pay attention to those whom they tended to ignore in real life (people who rarely express opinions). Using the qualitative data, we conclude (tentatively albeit confidently) that the game encourages players to co-operate and enter into consensus with people expressing different interests, and to pay attention to those who may not be able to give explicit opinions.

**Table 3. Key phrases used in debriefs after introduction of the invisible player.**

Increase in co-operative behavior	25
Increase in planning behavior	9
Increase in number of passes	3
Increase in communication	2
No change or still competitive	2

Note: Numbers are multiple counts.

**Table 4. Key phrases used in debriefs after introduction of “Hidden Goals”.**

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Consensus/communication	13
Compromise	10
Co-ordination	6
Valuing of minority opinions	4
Avoidance of majority votes	4
Pursuit of a common goal	3
Proposal of a new alternative	3
Persuasion/attempted persuasion	2
Utilization of third-party committee	1
Co-operation	1

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Note: Numbers are multiple counts.

## **Conclusion**

We believe that an advantage of using games to educate is to encourage the perspectives of others to be valued, thus resolving conflicts via communication. In other words, the game facilitates the development of self-metacognition and metacognition of others in terms of conflict; Klabbers (2006) found that game-playing improved metacognitive skills. The aim of “Hidden Goals” was to improve metacognition in a stepwise manner.

After introduction of the invisible player, human players begin to consider that player but still play competitively. Then, the common goal that the invisible player must win is introduced. At this stage, players start to think about others and to co-operate via strategic thinking; they plan together. After hidden goals are introduced, players begin to re-interpret the game. Superficially, the game is no longer competitive, because the facilitator states that the goal cards are “different”. However, not all goals are competitive; several can be attained together. Therefore, if players notice that some goals are compatible by carefully observing what other players do and say, they may co-operate with those players. The knowledge that some goals are incompatible but others compatible can be derived both during and after the game, even if the goal texts are not known in detail. Players who guess that some goals are compatible (that they thus have something in common with others) acquire metaknowledge of the game system. Such players might expand or transfer such knowledge to conflict resolution in the real world (see Phase 5 in the Appendix). They assume that, even if a conflict seems difficult to resolve, there may be certain compatible goals facilitating conflict resolution. In the real world, such compatible goals are seldom found because we focus on the differences among interested parties. “Hidden Goals” may help players to recognize this fact.

We emphasize again that Schelling tacit bargaining is the foundation of our approach to conflict resolution. Our game simulates Schelling's idea. Although we are satisfied with the game and the responses of players, we will acquire more quantitative data using a before-and-after experimental design to explore further the effects of play. In addition, we will improve facilitation; we will modify the debriefing questions for pedagogical purposes.

Although we believe our game would help people to define and change their mindsets, there are also limitations for our approach. First, the original game *Shichi-Narabe* is played only in Japan, and *Fan Tan* is played mainly in Asian culture. The rule of the game is relatively unfamiliar for most players outside Japan and Asia. Therefore, explanation and test play (Phase 1) may take much longer than expected. Therefore, the facilitator should study the game and should be familiar with the game rule before the game starts. Second, there are no evident rule for how to reach consensus about the hand of the invisible player. Therefore, players are include to decide by using a simple rule, e.g., by a majority vote. We have to propose some consensus-making rules for the further development of the game.

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## APPENDIX: “Hidden Goals”

**Number of players:** 3 to 5 players for a group.

Any number of groups play the game simultaneously and independently in, for example, a classroom.

**Supplies:** A 52-card pack of playing cards per group.

**Time:** Approximately 60 minutes for the game play. Additional 20 to 30 minutes are necessary for debriefing.

### Preparation

A player shuffles the deck thoroughly and deals all cards to all players before the game starts. Some players may have one more card than others; this is not disadvantageous as far as players play the game to some extent strategically.

### Phase 1: Playing Shichi-narabe

1. Players remove all sevens from their hands before the first card is played.
2. The player who has the seven of diamonds becomes the first player. The play rotates to the left (clockwise).
3. Players add one card per turn to a face-up layout on the table, continuing the sequence of each suit. Thus, there are four rows of suits, each beginning with the seven in the middle, and building down toward the aces on the left and up toward the kings on the right at the end of the game. In addition, aces and kings are interpreted as continuous numbers, and must therefore be played successively. After a king has been played, no other card can be placed below the seven. In this case, players must continue from the ace (i.e., building up). The same is true for the upper half from the seven when an ace is played; play continues from the king, thus building down.
4. A player may pass up to three times a game.
5. The winner is the first player to get rid of all her/his cards. The game continues until all players get rid of their cards; this allows players to be ranked.

### Phase 2: Introduction of an invisible player

1. A player shuffles the deck thoroughly and deals all cards to all players before the game starts. Cards are also dealt to an “invisible player”; these remain face-up on the table at all times during the game. Some players may have one more card than others; this is not disadvantageous.
2. The other rules are the same as the Phase 1 rules except that, when it is the invisible player’s turn, the other players decide what card to play from her/his hand.
3. The winner is the first player who gets rid of all her/his cards, including the invisible player.

### **Phase 3: Common goal (“Let the invisible player win”)**

1. A player shuffles the deck thoroughly and deals all cards to all players before the game starts. Cards are also dealt to the “invisible player”; these remain face-up on the table at all times. Some players may have one more card than others; this does not put them at a disadvantage.
2. The other rules are the same as for Phase 1 except that, when it is the invisible player’s turn, the other players must decide what card to play so that the invisible player can win.
3. If the invisible player wins, the human players have achieved the goal of the game as a team.

### **Phase 4: Hidden goals**

1. A player shuffles the deck thoroughly and deals all cards to all players before the game starts. Cards are also dealt to the “invisible player”; these remain face-up on the table at all times. Some players may have one more card than others; this does not put them at a disadvantage.
2. The dealer also distributes “Hidden Goals” cards to each player, excluding the invisible player. The goals are kept secret until the game ends.
3. The other rules are the same as those of Phase 1 except that, when it is the invisible player’s turn, the other players must decide what card to play.
4. The winners are those who achieve their goals (described on the cards).

### **Phase 5: Debriefing**

1. In principle, one facilitator can manage the process of the game and debriefing. If possible, some additional facilitators can join, especially for the earlier phases for players to fully realize the rule of the game.
2. The facilitator can ask questions to deepen the learning points from the game. The following are examples:
  - (1) Did your feelings and behaviors differ in phase 3 from those in phase 2? If yes, what are they and why?
  - (2) How did you deal with the invisible player and why?
  - (3) In Phase 4, did you notice that some of you have goals which are compatible, not competitive during the game play? If so, did your strategy of the game play change after you notice the fact?
  - (4) If you play the phase 5 again, do you think your strategy will change?
  - (5) Does this game reflect things that happened in the real world?

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