CMS.608 / CMS.864 Game Design
Spring 2008

Developing a Variant of Contract Bridge

INTRODUCTION

Contact Bridge is a popular trick-taking card game that originated from the British game Whist. The first published rulebook for the game, titled Biritch, or Russian Whist, was printed in 1886 in London; this version of whist included auctioning and the use of trumps. The modern version of bridge was developed by Harold Stirling Vanderbilt, who published a scoring system for contract bridge in 1925. The popularity of the game is in part due to its sociable nature; it is often played in teams of lovers and partners. Ely Culbertson dedicated his book Blue Book, a game about contract bridge, to "My wife and favorite partner" (Parlett, 1991, p.26).

In this paper, a variant of contract bridge will be studied. The development of this variant was explored through iterations of playtesting, and the results of these iteration will be analyzed. The aim of creating this variation was to design a version of bridge that allowed players to feel a greater sense of control over what cards they were dealt as well as allow players to exert some control over what cards were given to their opponents. The information and feedback systems of bridge were adjusted and explored to see whether these changes could help create a variant of bridge that was challenging and enjoyable.

RULES OF THE GAME

The variant created was based on the rules of contract bridge defined by the American Contract Bridge League (ABCL, 2005). Contract bridge scoring was not used for the variant because it added another level of complexity that was not necessary to observe the desired effects rule changes had on gameplay. A dummy was not used either because this variation allows all players to play and make decision in the game. Since the rules were changed over several iterations, the specific rule changes for each variant will be mentioned when each variant is discussed; the general rules of play are discussed below.

Bridge is played with four players at a square table; the players sitting across from each other form a partnership so that there are two teams. Bridge is played with a standard deck of 52 cards. First, all four players draw cards to determine who will be the dealer. Aces are the highest value card, while twos are the lowest. The order of the value of the suits from high to low is spades, hearts, diamonds, and clubs. The dealer than deals the cards face down one at a time to each player in clockwise order until all 52 cards are dealt. Each player should have 13 cards at this point.

The players then take turns bidding. The dealer bids first by stating the number of tricks he believes he and his partner can take as well as the suit of the trump. The bidding then proceeds in a clockwise fashion; a player can outbid another by either a) bidding the same number of tricks but a higher suit for the trump, or b) bidding a higher number of tricks for any trump. The order of suits for the trumps from high to low is no trump, spades, hearts, diamonds, and clubs. Bidding ends after three successive passes after a bid. The winning bidder and his partner must achieve the number of tricks stated in the bid to win the game.

The winning bidder then places down a card of his choice, called the lead. The other players then place down a card of the same suit one at a time in clockwise order. If a player has a card of the lead card's suit, it must be placed down; otherwise, the player can choose to discard any card from his hand or play a card of the

trump suit. If a player has multiple cards of the same suit, he can choose which one to play. One wins the trick by placing the highest value card of the leading card's suit or by placing the highest value trump card down. Once a trick is won, the four cards from that round of trick-taking are placed aside facedown. The player that wins the trick is the first to place down a card of his choice in the next round. This continues for thirteen rounds until all the cards are gone. If the winning bidder's team reaches their contracted number of tricks, his team has won; otherwise, the other team has won.

PLAYTESTING

The following variants were playtested by two groups. The first group, Group A, was composed of four players that all had some experience playing bridge. The second group, Group B, was composed of four players that had no experience playing bridge. For the second group, several rounds of bridge were played with no trumps, bidding, or scoring, to familiarize the group with the basic rules of bridge. Afterwards, bidding was introduced, and finally, the variants were played.

VARIANT I

In the first variant, only eight cards were originally dealt to each player instead of 13. The remaining 20 cards were left in a stack face down at the center of the table. Normal bidding would proceed, and the first round of trick-taking would be played. The winner of the first trick would then look at the top card of the central stack without revealing this card to any of the other players. He has two choices; he can a) keep this card in his hand and then deal one card to each of the remaining three players in clockwise order, or b) pass this card along to the next player and then continue dealing one card to the remaining players so that he is the last one to receive a card. For example, the winner may pick up the first card from the stack and find a three of clubs. If clubs are not the trump, the card has little value, so the player will most likely pass this to the opponent on his left. Afterwards, he continues to deal one card each to his partner, his opponent on his right, and then finally to himself, hoping that the card he receives will be higher than a three. The game continues in this fashion where after each round of trick-taking, the winner looks at the first card in the stack and chooses to keep it or pass it. After the fifth round, when the last cards from the central stack are distributed, the game continues as a normal game of bridge.

The purpose of this variant was to see how allowing players to exert some control over which cards they have or which cards their opponent have affected the gameplay. It was essentially an experiment on positive feedback; allowing the winner to look at the card in the center gives him an added advantage of either taking a high card for himself or giving a low card to his opponent. If he chooses to pass the card to his opponent, he not only has given his opponent a low card but he now also knows one card that his opponent certainly has.

Variant I was playtested by both Group A and Group B five times cumulatively. With both groups, bids were much lower than in a normal game of bridge since players did not know all of the cards they would eventually have in their hand. Because bids were lower, contracts would be fulfilled or lost more quickly than normal. An important result of the game was that the winning team continued to win because of the positive feedback built into the variant. It made sense that the winning team kept winning because positive feedback "encourages the system to exhibit more and more extreme behavior" (Salen and Zimmerman, 2004, p. 215). In the case of this variant, the "extreme behavior" is that the winning team keeps winning. The advantage of the winning player was not fully predicted at construction of the variant. The winning player deals three cards of unknown value to three of the players, and as a result, he does not know whether he has dealt high

cards or low cards to these players. However, testing found that allowing the player to look at just one card was enough to make the game unbalanced.

Imperfect information, or information hidden from players during the game (Salen and Zimmerman, 2004, p.204), decreases with this variant since the players now have the opportunity to pass cards of known value (only to the winning player) to their opponent. However, at the onset of the game, the amount of information known to the players is not as much as in a normal game of bridge because not all cards are dealt. Objective information in the game is the value of the trump and the cards that are available in a standard 52-card deck. The perceived information is a players idea of each players hand, including which cards have been played and which cards his opponent is saving to use. The amount of perceived information is directly related to the amount of imperfect information; as the amount of imperfect information decreases, the accuracy of a player's perceived information increases (if the player is skilled enough). The amount of imperfect information decreases with each round of trick-taking because the players have seen which cards have been played as well as whether or not a player is out of a certain suit. However, in this variant, the player also has to think about which cards may be in the central stack since not all the cards are dealt out. There is less certainty about whether or not a certain card is being held in an opponents' hand or if it is still in the stack. This added uncertainty made the game more complex and made it harder for players to judge whether or not a card could still be in play.

The variant is a complex, emergent system; although the deck of cards stays the same, the way the game plays out cannot be predicted. The randomness associated with the dealing of the cards and the different strategies employed by the players lead to highly coupled interactions; a players decision to play certain cards depends on what cards have been played as well as his perception of which cards are in his opponents hands. As the number of cards available decreases, his strategy changes so that the relationship between the system (the game) and the object (the strategy of the players) is constantly changing. It is also context-dependent because the strategies of the opponents change from game to game, so a player's choice of cards to play from his hands dependents on the context of the specific game he is playing.

Adding positive feedback was detrimental to the gameplay because it did not allow for a fair game. To account for this, a new variant, Variant II was developed.

VARIANT II

Variant II has the same rules as Variant I except that the player does not decide whether or not to keep the card. Winners of a trick are forced to take the first card from the stack and then continue dealing one card to each of the remaining players in clockwise order. This continues until all cards are played.

The objective of Variant II was to see whether the random dealing of cards throughout the game would make the game more exciting than dealing all cards at once in the beginning. It was expected that situations would arise where a losing player may be dealt a high card towards the end of the game that may help his team recover.

Variant II was playtested with both groups for a total of six rounds. It was found that the addition of the stack played a much weaker role in this variant because it simply added a random element to the game. The identity of the dealt cards from the central stack were for the most unknown; a player could not tell whether a player was holding onto a certain card or whether the card was still in the central deck. The game ended with

each team having about an equal number of tricks, which made sense because the game was mostly the same as regular contract bridge except that not all cards were dealt out initially and, consequently, bids were lower since players did not have 13 cards in their original hand. Players did not find this variant to be much more interesting than normal bridge partly because the game would end faster since bidding was lower. Again, this variant required players to think about what cards could be in the central stack, and players sometimes gambled on there being a card in the stack that ended up actually being in someone's hand. For example, one player played a jack hoping that the queen was still in the stack, but the following player played the queen of the same suit, winning the trick. The random element of dealing cards throughout the game did make the game less predictable, but it in general did not make the game much more exciting for the players.

Next, a variant was tested with negative feedback to see if it would produce a balanced game, meaning that at the end of the game, no team won by an overwhelming number of tricks.

VARIANT III

The third variant is exactly the same as Variant I except that the winning player does not look at the central stack. Instead, the player to his left, who is on the team that lost the previous trick, would look at the top card in the central stack. He would then decide to keep it or pass it onto the player on his left, and would deal out three more cards, one each to the remaining players. This would continue until all cards are played.

The objective of this variant was determine whether negative feedback would even out the game and make it interesting enough to be a game the players would enjoy playing.

This variant was playtested by both groups a total of ten times. It proved to be a well-balanced game, with the bidding team losing and winning about an equal number of times. Also, no team won by an overwhelming number of tricks. Negative feedback allowed the losing team to catch up by giving them the advantage of taking high cards or passing low cards to their opponents. According to cyberneticists J. De Rosnay, "In a negative loop every variation towards a plus triggers a correction towards the minus, and vice versa…the system oscillates around an ideal equilibrium" (Salen and Zimmerman, 2005, p.215). This was observed in the game, and negative feedback helped produce a fun variant of bridge. Again, the amount of perceived information in the game was affected by the amount of unknown cards in the stack, and bids tended to be lower.

One negative effect of the game was that sometimes it was confusing to remember who would lead the next round of trick-taking. With the defined set of rules for Variant III, the person who leads the next round is always the person to the right of the player who distributes cards from the central stack. From playtesting, it was found that sometimes players would get distracted by the dealing of the cards from the central stack and would not immediately know who would put down the leading card for the next round. To make this explicit, Variant IV was created.

VARIANT IV

Variant IV is the same as Variant III except for the following change. Again, the person to the left of the winner of the previous trick is able to view the top card of the central stack. This person will be referred to as "Kat" to avoid confusion. If Kat chooses to take this card, she deals one card each to the rest of the players so

that the winner of the last round is the last to receive a card. The winner then leads the next round. If, instead, Kat decides to pass the card to the next player, she then continues to deal one card to the remaining players such that Kat is the last player to receive a card. Kat is then the person who leads the next round. To summarize the rules, Kat has two choices:

1. If Kat chooses to keep the card, the winner of the last round leads the next round
2. If Kat chooses to pass the card, she leads the next round.

The objective of this variant was to make it clear which player would lead the next round; the last player to receive a card after cards are dealt from the central stack is the one who leads the next round. The variant was playtested by Group B a total of five times.

This rule change drastically changed the strategy of the game. Often, it is advantageous to be the last person to place a card down in a round of trick-taking because this person is able to base their strategy on the actions of the other players. However, in this version, if a player chooses to pass the top card of the stack to their opponent, he is forced to lead the next round. This is usually a disadvantage unless the player has a very good idea of what his opponents has or if the player has trump cards or high cards; however, since the player lost the last round, it is somewhat unlikely that he has good enough cards to win the trick, especially towards the end of the game. It was then usually a disadvantage for the losing team to pass the card—when the player passes the card, he is gambling on receiving a higher card than the one he passes on, and he is forced to lead the next round. As a result, the winning team usually won by a large margin. Because this variant was unbalanced, the changes made were discarded. In the end, Variant III was the most successful in creating an engaging game that had a good balance of random and non-random elements.

CONCLUSION

Variant III proved to be a successful bridge variant. The use of negative feedback helped give the losing team a better chance of winning and helped keep the game balanced. The addition of the central stack forced players to think about what cards were left in the stack on top of thinking about what cards were in their opponents hands, increasing the uncertainty of information in the game. Dealing eight cards to each player allowed the central stack to play a significant role in the game without having the bids be too low since players had a good idea of what to bid based on the cards they were originally given. Playtesting helped determine what elements made the game more enjoyable for the players in all of the variants, and helped generate the final ruleset for Variant III.

REFERENCES

Dalton, William. Bridge and Auction Bridge. Frederick A. Stokes Company, 1910.

How to Play Bridge. American Contract Bridge League. <http://www.acbl.org/learn /howToPlay.html>

Parlett, David. A History of Card Games. Oxford University Press, USA, 1991.

Salen and Zimmerman. Rules of Play. Cambridge, MA: MIT Press, 2004.