On Chess Variants

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Chess variants have caught attention of chess lovers for decades. Chess itself is a variant of Chathuranga. The availability of chess variants in popular chess playing platforms such as lichess.org and chess.com made chess variants more popular than ever. Variants that fascinated me include duck chess, Alice chess, horde, 4-player chess, antichess, fog of war, king of the hill, crazyhouse, and bughouse.

I am interested in different variants for different purposes.
1) Good for learning chess [could be used in coaching] (e.g. chess 960).
2) To promote chess [could be used in fun events] (e.g. human chess).
3) Just for fun (e.g. 4-player chess).
In this note, I introduce some chess variants of my invention.

1 Variants for learning chess

Typically, chess variants come into picture when chess is not complex or fun enough for you. This is no surprise since people don't like their games to be too simple (it is no coincidence that most games people play are PSPACE-hard). Usually, chess beginners stay away from chess variants to avoid things getting too complicated. Good for them, right? Yes and no. There are some chess variants which are helpful to learn chess. One such variant is the "catch the stars in a few moves" game/puzzle playable at https://lichess.org/learn. Some of the chess variants that could be useful to learn chess are listed below. Note that chess variants, like blitz or bullet, can help you learn chess only when used in the right way. So, it is a good idea to play the variants according to your coach's advice. Before starting with the list, I would like to point out that blitz, bullet and hyperbullet can be considered chess variants as far as beginners are concerned (although technically they are just different time controls). This is because the game dynamics are different for them compared to classical or rapid (e.g. one has to rely a lot on intuition).

- Odds chess and Chess 960
  (Existing variants)
  These are good ways to practice playing by opening principles (for odds, material difference should be small when used for this purpose). Odd chess could be played as handicap or not; both are interesting. A strong player can play against a weaker player with handicap in two ways: (i) one player has less pieces, (ii) equal material but less choice - e.g., both players remove a pawn; the weaker player gets to decide which pawn of both players are to be removed.

- Double Chess
  (Existing variant)
  Two chess games are played side by side (on separate boards). A team plays white on one board and black on the other. Checkmate in one of the boards ends the game.

- Double Chess Move Counter
  (Slight variation from existing variant)
  This is the same as double chess, except that the first to checkmate in fewest number of moves (rather than least clock time) wins the game for the team.

  Many do-something-in-fewest-moves type puzzles could be gamified this way. For instance, the puzzle "catch the stars in a few moves" playable in lichess, can be gamified this way. Similarly, double chess move counter this could be given as practice to checkmate fast, and it is a fun way compared to asking for mate in 4 or mate in 5. This game could be used as the game part of chess coaching sessions (takes less time, but does not offer training in opening).

- Puzzle Training Gamified
  Many chess platforms have gamified versions of chess puzzle training. This includes puzzle battle in chess.com, and puzzle race in lichess.org.

- Relay Chess
  (Slight variation from existing variant)
  This is a two vs. two game. Only 1 chess board is there, and it is alternate turns for both teams. You play in 5 consecutive turns of your team, and then your teammate plays in 5 consecutive turns. Before a player starts with the 5 consecutive turns, the player can propose to have 8 consecutive turns and the player and the opponent will play for 8 consecutive turns instead of 5. At the end of 8 consecutive turns, the teammates will get 8 consecutive turns. A player can propose for 8 consecutive turns at most once per game. I recommend to play this game with absolutely no communication between players (within a team and also between teams).

  This could be a good variant to teach positional chess.

- Hat Maniac
  Here, some pieces have a hat, and some of the empty squares contain a hat. There are two types of hats: whites hats and black hats. A white hat on an empty square is treated like an immobile white piece. White piece can neither move to nor pass through that square. The same goes for black hats on empty squares. A hat is collected by moving to an empty square containing a hat, or by capturing an opponent piece wearing a hat. White cannot move to a square containing a white hat. The same goes for black. Needless to say, you can't capture your own pieces. There is no king. Instead of a king, there could be a commoner (in diagrams, commoners should look visually different; a symbol for commoner used in chess-variants.org: ⍟). Commoner moves like king (incl. castling), but is not royal; it could be captured like any other piece. A player wins by collecting a hat of opposite colour.

  Two special cases of interest.
  1) *Race.* There is a white hat on an empty square, and a black hat on an empty square. The initial position is not the same as in chess. This could be introduced to students even before they are taught capture.

A simple set-up is to have the white hat in black's camp and the black hat in white's camp in the initial position (which is preferably not the initial position in chess). Here, it is simply a race. But, students often figure out by themselves the idea of blocking opponent from reaching their destination square. After capture is taught to students, they are allowed to capture.

2) *(Essentially) Chess without stalemate.* Instead of king, there is a commoner wearing a hat. The initial position is the same as in chess.

- Turn-based Vote Chess
  (Slight variation from existing variant)

  This is a variant of vote chess. This is played between two (preferably large) teams, one side playing white and the other side playing black. Apart from the white team and the black team, there is also a white adviser and a black adviser (for language convenience, they are not counted as part of the team). First, player 1 from white team suggests 3 options for the white's move; the player should announce the options quickly, and discussion with anyone is not allowed. 'Resign' could be one of the options. Then, each member of the white team (including player 1) votes for one among the 3 options. Before voting, the team members are encouraged to discuss between each other (e.g., for 5 minutes in the offline version, or for days in the online daily version). In the online version, each player are allowed to change his/her vote till the team's time is up. Once voting is done, the white adviser can announce 'blunder' (not allowed to explain anything). The white adviser is allowed to make such an announcement a maximum of 5 times during a game. After a 'blunder' announcement, the players are allowed to re-vote. After re-voting, a blunder announcement is not allowed. At this point, the move is sealed (same is true if the adviser does not announce 'blunder' at all). If there is a move with more votes than other options, that move is played as the team's move. If there is a tie between one or more moves, the adviser breaks the tie (i.e., decides which move to play among the options tied equally). A member can decide not to vote. If no member votes for any options, one of the options is chosen at random, and is played as the move.

  Black's first move is decided similarly starting with player 1 from black team suggesting 3 options. Then, white's second move is decided similarly starting with player 2 from white team suggesting 3 options. The game goes on in this fashion. To clarify, after the last player from white team suggest 3 options, the next turn goes to the first player from white team; the same convention is used for the black team.

- Bronstein chess and Set-up chess
  (Existing variants)
  Set-up chess is playable at chess.com. Bronstein chess is similar, but simpler; it is playable at pychess. These two variants could be a good practice for understanding desirable position of pieces in early middle game.

- Horde
  Horde is very much different from chess, but requires at least two skills useful in chess in higher dose– (1) breaking open a position, (2) playing an endgame against multiple passed pawns.

- Coin Collector

  This variant actually belongs in Section 3; the reason to include here is because I think it is a good way to teach centralisation.

  There are some fixed coin squares. On coin squares, there are coins at the start of the game, and coins are replenished there after every 7 moves. One way to collect a coin is by moving to the square containing it. After a piece collect a coin, the piece holds the coin. A piece can hold any number of coins. A second way to collect coins is to capture a piece holding coins. All the coins held by the captured piece goes to the piece that captured it (in addition to any coins the capturer already has).

  The game could end by usual chess rules (checkmate, stalemate, threefold repetion, mutual agreement, 50-move rule). If the game is not over by move 50, the game is stopped. The number of coins held by white and the number of coins held by black are recorded. Let us call the position at this point ignoring coins as 50-position (this is a standard chess position since coins are ignored). At this point, white and black are allowed to decalre mate in N (has to state the value of N), where $N \leq 5$. Then, white or black can declare a shorter mate *for their opponent*, say mate in M (has to state the value of N, where $N < M$). Then, white and black can think for 5 minutes, and they are allowed to white on a paper or try moving piece on their own boards, but they are not allowed to consult any engine or any other player. Then, white should try to substantiate the mate-in-N claim (if any) by playing from 50-position for N more moves against black and checkmating within N moves. If suffices to achieve this once, no need to show all lines (it is the opponent's job to try to refute the claim). Afterwards, black should try to substantiate the mate-in-M claim (if any) by playing from 50-position for M more moves against white with colours reversed, and checkmating within M moves. Similarly, black can try to substantiate any mate-in-N claim and white can try to substantiate any mate-in-M claim. Always, a successful claim gives a player a point 1, and a refuted claim gives a player a point -1. If a player has more points than the opponent, that player wins the game. If the points are tied (this includes the case where nobody made any claim), then the winner is decided by the number of coins held at reaching 50-position. If a player had more coins than the opponent, then that player wins the game. If both players have the same number of coins, then the game is a draw.

  The special case where the four central squares are the coin squares may be a good way to teach centralisation.

2 To promote chess

Chess is not and has never been a crowd-pleaser. And that is okay. But, when you organise an event and you want to promote chess by means of a fun event, there are still some good ways to go about it. The most challenging part of it is "how to make chess a social activity?". One idea is to make it a team event with at least 4 players per team, and have all members play on the same board (rather than on separate boards). Another idea is to make communication (within team and between teams) more important. Engaging announcements are essential to make such fun events appealing. Allowing more illegal moves than in standard chess should be the norm (e.g. allow 5 or 10 illegal moves depending on the level of players involved).

- Turn-based Vote Chess Explainer

(Slight variation from existing variant)

This is almost the same as the game 'Turn-based votes chess' described here, in Section 1. The only difference is that here, advisers are allowed to briefly explain why a move is a blunder (say, for 2 minutes). They are not allowed to suggest moves or ideas. If an adviser suggests a move or an idea (even if it is by mistake), the team forfeits voting rights. From there on (including that move), that team's move is decided out of the 3 suggested options by choosing one option at random.

- Human chess
  (Existing variant)
  In human chess, people stand as pieces and move according to the direction of the white/black counsellors who decide the moves. Often, human chess was used to exhibit interesting games played beforehand.

- Revolutionist chess
  (Slight variation from existing variant)
  This is a slight variation of human chess. This variant was proposed as a substitute for chess when the subjects of the red and white kingdoms protested for freedom. After the peace meetings with the protesters, the final decision was that counsellors decide which piece to move, but the piece decides where to move.

  An advantage of revolutionist chess in a fun event is that (other than counsellors) a participant need to learn only movement of one piece (knowing movements of other pieces is good, but not necessary to play the game in a fun event).

3 Just for fun

3.1 Attempts at making existing variants more balanced

I personally feel that some chess variants reward aggressive play a bit too much. For example, you can sacrifice a lot of material in crazyhouse if you can keep the momentum. This is possible, because unlike in chess, you have less chances of running out of pieces. Therefore, I think that changing the rules of the games crazyhouse and bughouse slightly to discourage over-aggressive play could balance the games a bit. Another issue in bughouse that need to be fixed is a time crunch problem exlplained in the chess.com article Bughouse and Time: A Quick Fix by JarlCarlander. My solution to this time crunch problem is to put one clock for a team, and then to explicitly introduce time sacrifice for piece if desired. The new variants I propose along these lines are described below.

- Bughouse Minus Time Madness (Bughouse MTM)
  (This is my solution to the time crunch problem in bughouse)

  This is an idea that could work for online bughouse, but this changes the dynamics of the game regarding time (for the good, I hope).

  In both boards, one team has white (and the other team black). The pieces you capture switch colour and are added to the pool of pieces your teammate can introduce in his/her board. Also, there is a shared clock for both boards. Both players in a team have to make their moves to complete the move (till then, their clock is running). From a team, who moves first at a turn is up to that team (this matters since if the player who moves first captures a

piece, the other player in the team can introduce that piece). This removes the possibility of sacrificing time for material, but there is still a time factor because a delay in 1 board affects the other board too.

White team plays with a pawn handicap (this is to balance the game; recall that both players from that team plays white). At the start of the game, white should choose a board and a remove white pawn of their choice from that board.

- Bargain Bughouse
  (technically, Bargain Bughouse MTM)

  It is the same as Bughouse MTM except for two changes: (1) clock time is explicitly sacrificed for introducing a piece (from the captured pieces pool), (2) white starts with a time handicap of 5 ts (timesac unit, written ts, is initial clock time divided by 40 [which is close to 39, the sum of values of pieces]).

  Here, time sacrificed for introducing a piece varies (not with piece, but with 'bargain'). When white captures a black piece (say rook), the captured piece is added to white's intro pool and its value (here, rook's value 5) is added to white's timesac total. When white proposes to introduce a piece from his/her intro pool (no need to specify which piece), black should respond by stating a number, say N, less than white's timesac total (provided white's timesac total is positive). White can then decide not to introduce a piece. Or white can introduce a piece which will cut down white's clock time by N ts and bring down white's timesac total by N. The same is the sitation when black captures a piece or proposes to introduce a piece.
  Note: For this game to be interesting, the clock time should not be low and increment time should be significant (e.g. 10 min+ 30 sec).

- Timesac Bughouse
  (technically, Timesac Bughouse MTM)

  This is a less interesting version of Bargain bughouse MTM, but this is the simpler version and could be played even with faster time controls. It is the same as bughouse MTM except for one change: clock time is explicitly sacrificed for introducing a piece (from the captured pieces pool). Here, time sacrificed for introducing a piece is fixed, and is a parameter (clock time + increment time − *timesac time*).

- Bughouse with Denial
  The game is the same as bughouse except that a team that has not introduced a captured piece for last 3 moves can deny the opponent team from introducing a captured piece. The opponent team can ignore this denial if they haven't introduced a captured piece for the last 7 moves; otherwise, they have to accept the denial (and play a regular chess move instead). So, this mixes bughouse with double chess. Teams cannot simply sacrifice pieces in typical bughouse fashion because the game could be converted to double chess (if the opponent can resist introducing a piece for 3 moves).

  The same time control as bughouse could be used (which could be 5+0; there should be no increment). Only difference is that 'denying' introducing moves is an option, and ignoring denial is an option (in online games, both could be done by just pressing the 'Enter' button on keyboard; other moves are made normally on the board).

- Crazyhouse with Clear Pool
  The game is the same the crazyhouse, except that a player can make a regular chess move

and then issue a clear pool proposal. The opponent can respond to this by either (i) playing a regular chess move, and then rejecting or accepting the proposal, or (ii) introduce a piece from the captured pieces pool, which automatically accepts the proposal. If the proposal is accepted, both players' captured pieces pools are cleared. Once a player made a clear pool proposal, there is a waiting period of 4 moves before making another clear pool proposal.

The same time control as crazyhouse could be used. Only difference is that proposing clear pool is an option, and accepting clear pool proposal is an option making a regular move (in online games, both could be done by just pressing the 'Enter' button on keyboard before making the move).

3.2 Miscellaneous

The intention of the following variant is to make the communication aspect of bughouse more prominent.

- Buddy Chess
  Two teams of size two each compete in this game. This game has flavours of both crazyhouse and bughouse. The game is played on 2 boards in 1 vs. 1 bughouse style. Both members of a team play the same colour. The pieces you/teammate capture changes colour, and is added to the pool of pieces you/teammate can introduce later in crazyhouse style. A checkmate in one of the boards ends the game.

  There is a shared clock for both boards. Both players in a team have to make their moves to complete the move (in offline mode, both have to play their moves and then press the shared clock).

Finally, here is a variant with fairy chess pieces.

- Middle-Earth Chess
  The board is the same. Pieces and initial set-up are different. Instead of queen, there is a piece called hopper that can either (i) move to one of the 8 nearby squares, provided it is empty, or (ii) make a sequence of hops to land on an empty square or to capture an opponent piece on that square. Instead of pawn, we have a footman that moves 1 or 2 squares forward or diagonally forward (not allowed to hop over), and capture 1 square diagonally forward. A white (resp. black) footman reaching the 8th rank (resp. 1st rank) is promoted into a skilled footman. A skilled footman can move 1 or 2 squares forward, backward, diagonally forward or diagonally backward, and can capture a piece on a nearby diagonal square. Instead of king, we have a commoner who has access to a wizard ring. Like king, commoner moves to a nearby square, but it is allowed to make 2 other types of movement while staying on the same square. Initially, both commoners have rings. A ring has count-down timer. When a piece gets the ring for the first time, the ring's count-down timer resets to 15. When a piece with ring spends a turn without moving, the count-down timer decreases by one. When a piece with ring moves, the ring's count-down timer decreases by the number of squares travelled (e.g. a rook with ring moving from a1 to a5 decreases the ring's count-down timer by 4; movement of knight with ring costs 2; movement of a commoner with ring costs 1; a hopping movement of a hopper with ring costs twice the number of hops). When a piece with ring makes a capture, the ring's count-down timer decreases by 4. The opponent pieces attacked

by a piece with ring freezes (it cannot move or make any capture), provided the ring's count-down timer is positive. A commoner wearing a ring can give the ring to a nearby piece (of same colour). Besides, the commoner can also take ring from a nearby piece (of same colour). A frozen commoner cannot give or take ring. The aim of the game is to capture opponent's piece wearing the ring. In the initial configuration, there are many footmen (see Figure 1).

Figure 1: Initial set-up of Middle-earth chess. For ease of drawing, a king is drawn in place of a commoner, a queen is drawn in place of a hopper, and a pawn is drawn in place of a footman.

Threefold repetition and 50-move rule draws still hold, but the position of rings should be also be the same in threefold repetition. To be clear, taking/giving rings does not reset the counter for 50-move rule (only captures and 'pawn' movements do).