Novel Chess Variants

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1. **All-In Crazyhouse**

   Capturing is stochastic. The attacker wins with probability $A/(A + D)$ and the defender with probability $D/(A+D)$, where A is the value of the attacking piece and D the value of the defending piece. If the attacker wins, the piece is captured as usual in crazyhouse, otherwise the attacking piece is added to the opponent's inventory. A and D take the following values: 1 for ♙s, 3 for ♘s and ♗s, 5 for ♖s, 9 for ♕s, and 25 for ♔s.

2. **Alliance**

   Two different pieces (♖♗♘) may move unto the same square ($>$) to form stronger pieces: ♖$+$ ♗$\to$ ♕, ♖$+$ ♘$\to$ Elephant (E), ♗$+$ ♘$\to$ Hawk (H). Vice versa, a strong piece (♕EH) may break up ($<$) into two weaker pieces (same, but with arrows reversed).

3. **Annihilation House**

   If both players hold material of the same kind, a special annihilation move is possible. Suppose that both players have a bishop in their inventory. Then one can annihilate both bishops as one's move, after which both bishops are permanently out of play. This adds endgames to crazyhouse.

4. **Arrow**

   In chess, a legal move M always goes from some legal position P to a legal position P^*. In Arrow, there is a move M^* for each M so that M^* is a legal move in position P^* and results in position P. Thus, pieces can be uncaptured and unpromote, pawns can move backwards, and kings can uncastle.

5. **Backside Story**

   The chessboard has a backside as well, represented by an initially empty chessboard laying to the right of the other one, with files h' to a' (file h' is to the right of h and file a' to the left of a). Example game:

   1 e4, e5 2 ♘f3, ♘c6 3 ♗c4, ♗c5, 4 O-O, ♖af'8 5 ♘c3?? (unsuspecting), ♕f'1+ 6 R×f'1, R×f'1 mate.

6. **Banners**

   Each pawn carries a banner (2x♖, 2x♘, 2x♗, 1x♕, 1x♔) and the pawn can only promote to that piece. The king pawn can promote to a king; if a player has two kings, either one can be captured after which the normal rules for checkmate apply again. Each player can place the pawns as they like, without the opponent knowing which pawn promotes to what!

   In S-Banners, the banners are 1x♖, 1x♘, 1x♗, 1x♕, 1x♔, 1x Hawk, 1x Elephant, and 1x♙ (creating a dummy pawn upon promotion).

7. **Baucis & Philemon**

   Like S-Chess, but each player gets to pick one of the two gated fairy chess pieces (White picks Baucis and Black Philemon). By default, gating is "restricted" rather than "free", which means that (a) White cannot gate Baucis before their opponent does and (b) she loses the right to gate Philemon if their opponent is out of gating squares.

8. **Big Bang**

   All of White's (Black's) material starts on the initial square d1 (e8). Pawns on d1 (e8) can move to any free square on the second (seventh) rank. Moving friendly pieces to d1 or e8 while it's not yet vacated or otherwise sharing squares is not allowed.

9. **Blocks**

   Each 2x2 square of four squares can move, but not capture, like any of the pieces inside the 2x2 square, provided that there are no obstacles in the way. For example, **1 ab12-ab56** moves the a1 rook to a5, the b1 knight to b5, and the a2 and b2 pawns to a6 and b6.

10. **Closed**

    There are eight additional points at infinity: **z0**, **z4.5**, and **z9** (all to the left of the 'a' file) **de0**, **de9**, **i0**, **i4.5**, and **i9**. All rows converge to z4.5 and i4.5; all columns to de0 and de9; all black diagonals to z0 and i9; all white diagonals to z9 and i0. Rooks, bishops, and queens may be moved to these squares if the path is clear (for example, in the starting position, white may play ♖a1-z4.5, ♖a1-de0, or ♗c1-z0, but not ♗c1-i9, since the d2 pawn blocks its path). There is, however, a catch. A second, activation move is needed before the piece can depart from this square. For example, after **1 ♗i9, (any reply)**, White cannot yet move their dark-squared bishop, and will first have to play Bi9* at some point in the game to activate their bishop.

11. **Demotion**

    Pieces may "demote" and become a pawn upon completing their move.

12. **Dictators**

The winning player may choose how to distribute the full point up to a precision of three decimals, e.g., 0.667–0.333. In case of a draw, both players may choose how to allocate their half of the point.

13. **Elysium**

Any captured piece is reborn circe-style in Elysium, an initially empty chessboard. Self-captures are allowed on Earth, but not in Elysium. Pieces whose rebirth square is occupied or who are captured on Elysium are removed from the game. Thus, a king on Earth may be captured if its rebirth square is not occupied. A draw is 1–1 and a win 3–0. Additionally, (a) drawing with one's king on Earth and the opponent's king in Elysium, and (b) winning yield 1 and $1\frac{1}{2}$ advantage points respectively. Drawing with both kings on the same board and exclusively one's own pieces on the other yields $\frac{1}{2}$ AP. Advantage points (APs) are counted separately from the score and may be used as the first tiebreaker.

Elysium has coordinates S1-Z8. For rooks, knights, and bishops, the color of the square on which the piece is captured determines where it is reborn. For pawns, the file on which they are captured is the determinant, and for promoted pieces the promotion square corresponding to the file of capture. Here is an example game that illustrates these principles.

1 d4, d5 2 c4, e5, 3 d×e5@w7, d4 4 e3, ♝b4 (note that this is not a check: w1 is not occupied) **5 ♝d2, d×e3@w2 6 ♝×b4@x8** (not u8!) **e×f2@x2 7 ♚e2, f×g1=♞@y1** (not t1!) **8 ♜×g1** (the knight, being a promoted piece, would have been reborn on y1 rather than t8, were it not for the fact that y1 is already occupied!). The game continues **8 ... , ♝g4, 9 ♚×d1@v1, ♝×d1@w1 10 ♛v8** and black will have to settle for 1–0 in APs.

14. **Equal Opportunity**

Any piece and king can castle Fischer Random style with any other piece. Even the two rooks can castle with each other (**R-R**). The usual requirements hold, and the castling pieces end up at the usual squares. Bound to cause confusion!

15. **Ferz & Wazir**

There are two kings: a Ferz (F) and a Wazir (W). The Ferz optionally enters through gating and cannot castle; the Wazir takes the place of the king and can castle. The goal is to capture both. Pawns can promote to kings—but a player can never have more than one Ferz or Wazir. For the score of the game, each safe own king yields $\frac{1}{4}$ points, as does each captured opponent king.

16. **Five!!**

Pieces can also move to the edges and intersections of squares, as long as they are not on the edge of the board, and subject to the distance rule

below. The files are **a, a♯, b, b♯, c, c♯, ..., g, g♯, h** (and equivalently **a, b♭, b, c♭** etc.): the ranks **10, 15, 20, 25, 30, ..., 70, 75**, and **80**. A king on e40 can move to the usual squares (e50, f50, f40, f30, e30, d30, d40, and d50), plus to the edges e45, e♯40, e35, and e♭4 and to the intersections e♯45, e♯35, e♭45, and e♭35. A king on e45 can move to e50, e55, e♯50, f55, e♯45, f45, e♯40, f35, e40, e35, and so on. The pattern should be clear by now: if a piece can move one square in a direction in chess, it can move half a square or one square in that direction in Five!! (Quiz: to which 16 squares can a king on e♯45 move?).

A knight on g10 on an empty board can move to the usual squares and to f15, f♯20, g♯20, and h15; a pawn on e40 to e45, e50, e55, and e60 (and capture on d30, d♯25, e♯25, and f30). Castling works like usual. En passant works whenever an enemy pawn passes a capturing square of a player's pawn by moving $1\frac{1}{2}$ or 2 squares.

The distance rule of Five!!

All pieces (♙♘♗♖♕♔) always need to be at least one square apart. That is, if a piece occupies e40, no pieces can stand on the four adjacent edges (e45 etc.) or four adjacent intersections (d♯45 etc.). If a piece occupies e45, no pieces can stand on its adjacent two squares (e40 and e50), four edges (d♯40, e♯40, d♯50, e♯50), or two intersections (d♯45 and e♯45). (Quiz: what if a piece occupies d♯45?)

17. **Gummy Dummy**

   The goal is to end the game with as many dummy pawns as possible. A dummy pawn is a pawn that doesn't promote to a piece upon reaching its promotion square but stays a pawn. The king is just a normal piece. The game ends if one of the players can't make a move anymore. Each dummy pawn counts for 1 point; each opponent's dummy pawn for -1 points. (Resigning yields $-N$ points, with N the number of opponent pawns.)

18. **Harmony**

   A winning or losing player may announce "Mate in N!" with N at least 2. If the position on the board is exactly a mate-in-N for that player, the winning player gets $1+\frac{1}{2}+\frac{1}{3}+\ldots+\frac{1}{N}$ points and their opponent $\frac{1}{N}$ points. (E.g., a correct mate-in-three for White yields $1\frac{5}{6}-\frac{1}{3}$.) If a winning player makes an incorrect announcement or checkmates the opponent the result is a $\frac{1}{2}-\frac{1}{2}$ draw; if a loser makes an incorrect announcement, they lose the right to make an announcement again for the remainder of the game, even if later on they are winning. Resignation loses with 0–3.

19. **Hoppers**

   Upon completing their move, queens may transform into grasshoppers, rooks into rook hoppers, and bishops into bishop hoppers. Hoppers may

(but do not have to) promote back to normal pieces upon reaching the promotion rank.

20. **Hurdles**

Upon moving, a piece of material of the opponent's color may be dropped on the board if available.

21. **Immigration**

Another set of chess pieces (♛♜♜♝♝♞♞; with one bishops of each color) enters the board by gating, e.g., 1 ♞f3/♝. Gating is optional, and as soon as a back-rank square has been vacated once, gating on that square is not allowed anymore.

22. **King in the Valley**

A king on one of the four central squares may optionally move off the board ("into the valley"; O-O-O-O) after which the kingless side cannot lose anymore, only draw or win. Like castling, moving into the valley isn't allowed when in check. If both kings move off the board, it's a draw.

23. **Knapsack**

Material keeps other material it captures in its knapsack. Upon capturing material with a knapsack, all the material inside the knapsack is available to be dropped like in crazyhouse to the capturer.

24. **Knighted**

Courage should be rewarded! When a piece retreats from a square where it could have been legally captured by a pawn on the previous move, it gets knighted! Knighting works like this: ♜→ Elephant (E), ♝→ Hawk (H), ♛→ amazon (A), and ♞→ knightrider (R). For example,

1 e4, e5 2 ♞f3, ♞c6 3 ♞c3, ♞f6 4 ♝b5, ♞d4 5 ♝a4, ♝c5 6 ♞xe5, O-O7 ♞d3, ♝b6, 8 e5, c6! 9 O-O?, ♞e8=R and black is significantly better thanks to having a nightrider for a knight!

25. **Mare & Stallion**

Queens and knights can get pregnant! The king's knight is a mare, the queen's knight a stallion. Mare and stallion (king and queen) may "share a night" if they are a knight's (king's) move away from each other which takes one move and is denoted as M-S (Q-K). Eleven (nine) months later, the stallion (queen) gives birth by making a non-capturing move and dropping a new mare or stallion (pawn) on the square of departure. Upon giving birth, queens may only move one step in any direction. Giving birth is obligatory but takes zero moves.

26. **Metamorphosis**

Upon completing its move, a piece may optionally swap positions with a different piece of the same color.

27. **Outcasts**

During each game of chess, one may make one move in each of the following categories. (To keep track of the allowed moves, one could use six playing cards per person with "P"–"K" inscribed on them.)

- (P) Move a ♙ one square backwards
- (N) Move a ♘ like a ♗
- (B) Move a ♗ like a ♖
- (R) Move a ♖ like a ♕
- (Q) Move a ♕ like a ♘
- (K) Move a ♔ two squares in one direction (passing through check, however, allows e.p. capture of the king)

Caveats: pawns on the home rank may not be moved backwards and pawns may move two squares back if they end up on their home rank (and may subsequently move one or two squares forward). Variation: all of these need to have been done before the end of the game (though the mating move may be one of the above).

28. **Portals**

Capturing a pawn results in a portal being opened if closed, and vice versa. There are 16 portals (denoted with P): A1/H1 (P1), A2/H2 (P2), ..., A8/H8 (P8), and A1/A8 (PA), B1/B8 (PB), ..., H1/H8 (PH). If a portal is open, the two squares are 'glued' together, so that they are the same square (but two pieces may occupy it). If PE is open and P4 closed and a pawn is captured on E4, PE closes and P4 opens, so that e.g. a knight on h4 can jump to c5. At the start of the game all portals are closed.

29. **Prisoner's Dilemma**

Only for the connoisseur of grandmaster draws: wins are 1–0 and 0–1 like usual, but draws are $\frac{2}{3}$–$\frac{2}{3}$. Will make any tournament less interesting!

30. **Recursive Chess**

See https://cuboids.github.io/2022/07/24/recursive-chess.html.

31. **S-House with a Hint of Shogi**

This one is actually equivalent to S-House, but with the starting position equal to the position after

1. e3 e6 2. ♔e2/E ♔e7/E [Van't Kruijs, Elephant Bongcloud] 3. a3 a6 4. b3 b6 5. c3 c6 6. d3 d6 7. f3 f6 8. g3 g6 9. h3 h6 10. ♕d2/H ♕d7/H 11. Hb2 Hb7 12. Eg2 Eg7 13. ♕d1 ♕d8 14. ♔e1 ♔e8.

32. **Seeing Color**

   In the final position, the fractions of pieces on white and black squares is calculated. For example, if 3 pieces are on white squares and 5 on black squares these fractions are $\frac{3}{8}$ and $\frac{5}{8}$. These fractions are multiplied by the game result to obtain the total number of points for the two players. For example, if White won, White's score is $\frac{3}{8}$–0, in case of a draw we have $\frac{3}{16}$–$\frac{5}{16}$, and if black won the result is 0–$\frac{5}{8}$.

33. **Sideways Promotion**

   Pawns can move one square sideways toward the rank furthest from them and capture diagonally sideways in that direction. They promote on the furthest rank from them on the opposite side of the board: e.g., white's queenside pawns promote on h5-h8 and black's kingside pawns on a1-a4. In addition, pawns can move (but not capture) forward like normal pawns, and may even occupy the first and last rank. All pawns on their initial rank may move two squares forwards.

34. **Three Drops**

   Each player may remove one of their pieces or pawns and drop it on a different square up to three times during the game.

35. **Time Travel Chess**

   See `https://cuboids.github.io/2022/07/18/time-travel-chess.html`.

36. **Too Crowded**

   Friendly material may share a square. Capturing captures all material on a square.

37. **Two Palaces**

   The chess board is extended with two palaces: the Summer Palace on files a', b', and c' (to the left of file a), and the Winter Palace on files f', g', and h' (to the right of file h). The Summer palace consists of squares a'6-8, b'6, b'8, and c'6-8; the Winter Palace of squares f'1-3, g'1, g'3, and h'1-3. To enter the Summer Palace, a ♖, ♔, or ♕ needs to be on a7 and move to c'7 (for the Winter palace, the relevant squares are h2 and a'2); ♘s, ♗s, and ♙s cannot enter. There's one more caveat: White cannot enter the Winter Palace before White's king enters the Summer Palace, and vice versa for Black.

38. **Xenia**

   Upon completing its move, a piece or pawn can be gifted to the opponent, flipping its color. Gifted pieces cannot be gifted back. The player's score for a game is calculated as result $(0, \frac{1}{2}, 1) \times$ gifts $(1 + \frac{1}{4}$ for each pawn $+ \frac{1}{2}$ for each light bishop or knight $+ 1$ for each rook $+ 2$ for each queen).

39. **You Shall Not Pass**

   Pawns can capture any piece passing by one of its capturing squares en passant. For example,

   1. d4, g5 2. e4, f5?! (setting up a trap) 3. ♕h5+?? fxg4 e.p.!

40. **Wild West**

   Castling is allowed if (a) a ♔is on d1 or e1, (b) a ♖on a1 or h1, and (c) the position after castling is legal. No other rules apply!