Hybridization in board game design: some examples

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Abstract

Several chess variants on different boards combining elements from other chess games are introduced and used to illustrate the potential of hybridization as a tool in the creation of new game varieties. In addition, circular draughts variants are suggested.

Keywords: chess variants, draughts variants, board games, hybridization

Introduction

Hybridization is increasingly recognized as one of the means of speciation in the natural world (Ottenburghs 2018); similarly, hybridizing already existing game variants could provide interesting results, as hopefully demonstrated by the following examples:

Turkish Great Chesquerque

Based on George R. Deckle Sr.'s Chesquerque and the reconstructed and reformed rules of Turkish Great Chess as presented by Markov & Härtel (2020).Chesquerque, a game invented in 1986 by George R. Deckle Sr. (Pritchard 2007, p. 195), was conceived as a hybrid of chess and alquerque. The board consists of four alquerque boards combined (effectively, a Zamma board). Pieces are positioned on the lines as in alquerque or xiangqi and move along them. On a point with diagonals, R can additionally move one step diagonally. On any point, B can additionally move one step orthogonally. Most importantly, N never leaps – thus when on a point without diagonals it moves one step orthogonally then one diagonally; and vice versa on a point with diagonals. Pawn moves and captures one step orthogonally on a point without diagonals and as an orthochess pawn on a point with; initial double step (non-capturing) optional, *en passant* captures allowed depending on pawn position (a diagonal must be available). Promotion as in orthochess, when

castling, K leaps 3 points. The extra piece, archbishop, moves as (chesquerque) B+N, i.e., can move one step orthogonally, and cannot leap on the N move. Baseline RNBQKABNR. The absence of leapers in chesquerque provides a rare opportunity for incorporating a piece that is otherwise too strong, namely the amazon, or Q+N compound. A non-leaping chesquerque amazon is less formidable; besides, it is less different from the chesquerque archbishop with its orthogonal step than their chess counterparts. An "amazon chesquerque" variant, with Qs and As crosswise, unlike the original game, is presented on Fig. 1.
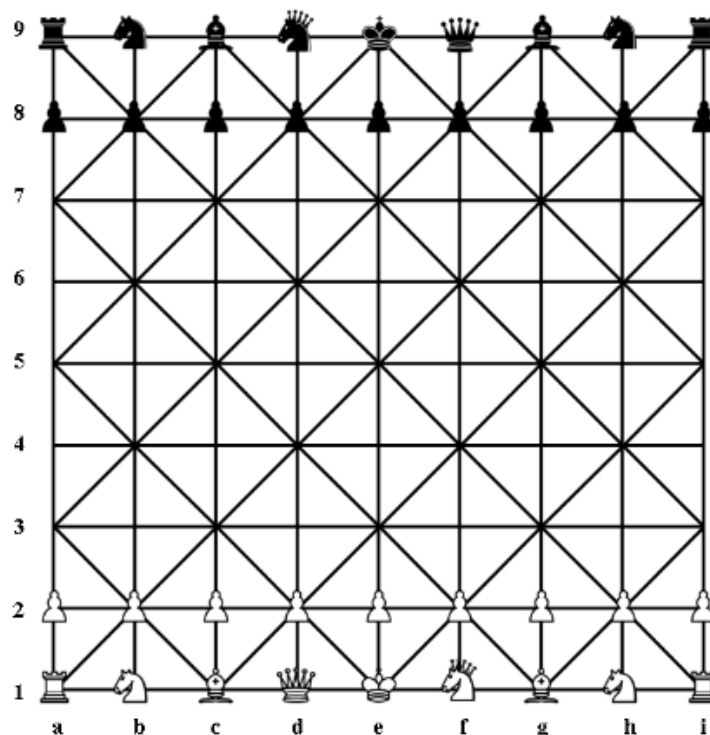

Fig. 1. "Amazon chesquerque" with amazons replacing archbishops; queens and amazons crosswise.

As said, chesquerque board is made of 4 (2^2) alquerque boards put together, resulting in a 9x9 grid. 9 (3^2) alquerque boards put together would result in a 13x13 grid, conveniently corresponding to the 13x13 board of Turkish Great Chess. For the latter game, two rulesets, a reconstructed and a reformed one, were suggested by Markov & Härtel (2020). The reconstructed rules include an amazon (replaced by a R+K+N compound in the reformed ones); two rhinoceroses (B+N) and two gazelles moving as a problemists camel and depicted as such. Crossed with chesquerque it

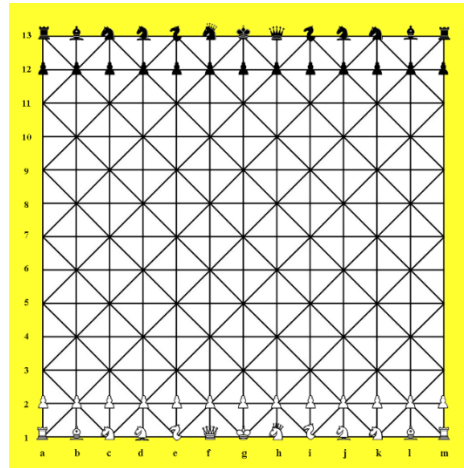results in the following game played on a 13x13 grid (Fig. 2):

Fig. 2. Turkish Great Chesquerque, initial array.

The original chesquerque (cq) archbishop is back (twice) as rhinos, gazelles move one step diagonally then two orthogonally (since cq B as said can also move one orthogonally, cq gazelles are the only truly "colourbound" pieces, always from a point with diagonals to another one, and of course not leaping[1]). Played according to chesquerque rules except there is no double initial pawn move unlike the original game and when castling K can go to any point up to and including R place and vice versa – but they must exchange positions (taken from our reformed rules for Turkish Great Chess, no castling in the reconstructed ones).

The board can also be used for a large Zamma version with 84 pieces per side.

Circular chess variants on different boards

Circular chess variants have existed for more than a millennium but their number – especially two-handed ones, with pieces moving around the centre of the board deisial and withershins – is surprisingly low. A popular variant invented in the 1980s by David Reynolds, Modern (or Lincoln) Circular Chess (Fig. 3), has White's K on the player's left flank (thus Ks on d1/d8), a1 is light, *en passant* and castling do not

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1 In the unlikely case of a pawn being promoted to a gazelle on a point without diagonals, the gazelle's move would be one step orthogonally, one diagonally, and one more orthogonally along the same direction, e.g. b1-b2-c3-c4, again without leaping.

exist, and "empty" moves (e.g. R making full circle ending up on the field it started from) are forbidden (Beasley 1999, 2001).
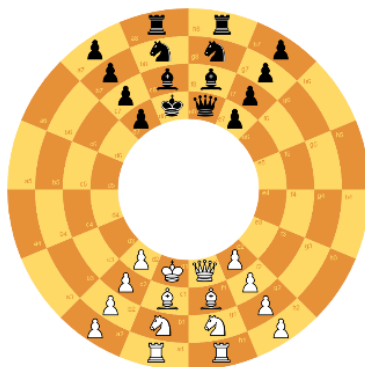

Fig. 3. Modern Circular Chess, David Reynolds, 1983.

All of these, including the notation system (a1 white), apply to the variants described below, played on larger boards; yet even the original board with 64 spaces has a huge unused potential – e.g. circular Losing Chess, circular Pocket Knight Chess, circular variants of Indian, Mongolian or Maldivian or ASEAN chess, or circular Makruk, not to mention the possibility of adapting numerous draughts variants as discussed later in this paper.

Circular Janus Chess

Janus Chess, or Super-Schach, invented in the 1970s by Werner Schöndorf is played on a 10x8 board with RJNBKQBNJR, where J = B+N; when castling K moves to J square (Pritchard 2007, p. 124). Like Lincoln Circular Chess, Janus Chess is a popular variant with tournaments and strong players. For the circular variant (Fig. 4), castling and *en passant* capture are dropped. Note that unlike the original game, J pawn is protected in the circular version.
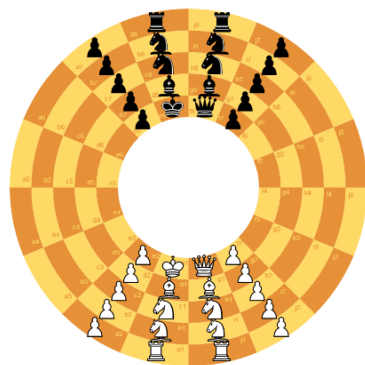

Fig. 4. Circular Janus Chess.

Circular Modern Courier Chess

Paul Byway's Modern Courier Chess (1971, with later amendments: Byway 1992, 1998, 2001a, 2001b; Beasley 2004) is played on a 12x8 board, with two ferses on e and h (moving one square diagonally) and two couriers on c and j (leaping 2 orthogonally or diagonally). On its first move F has the option of a double move but not to capture, and so does the K if it is not in check or going through check. These options are dropped in the circular variant (Fig. 5) – just like castling is in Reynolds' game.
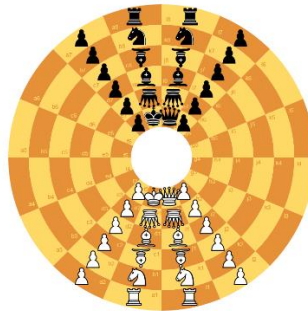

Fig. 5. Circular Modern Courier Chess.

Circular Decimal Moldovan Chess

Invented in the 1990s by Fedor Skripchenko (Skripchenko 2008), this variant, while not well known in the west, has been played on tournaments (Skripchenko's book provides ten or so recorded games). The original game is played on a 10x10 board with Black on rows 1 and 2 playing first (so that starting player has his K to the right of Q, while keeping them on the "appropriate" colours), with two "rockets" (B+N) on d1/8 and g1/8; pawns have the option of moving 1 to 3 squares on their first move, when castling, K leaps two squares only (as in orthochess). The circular variant (Fig. 6) follows Reynolds' game in the position of pieces and absence of castling, the option for a triple initial move is preserved.
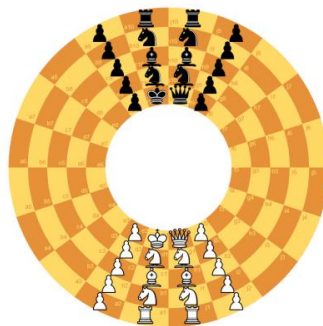

Fig. 6. Circular Decimal Moldovan Chess.

Circular Verney's Duodecimal Chess

Unlike the other three large variants discussed above, Verney's Duodecimal Chess not only has not gained any popularity – it was created by mistake by G. H. Verney who believed to be describing Alfonso's Great Chess, a medieval variant. Since it can be regarded as an enhanced version of Courier Chess (Markov 2019) – or, indeed, as a hybrid between courier chess and Moldovan decimal chess – and about a century before Moldovan decimal chess was actually created for that matter, sharing the B+N compound piece both with it and Janus chess, Verney's game fits with the rest of the variants discussed here, adding a circular variant on a 12x12 board (Fig. 7).
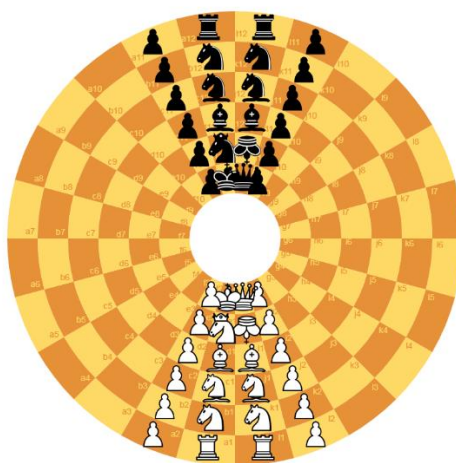

Fig. 7. Circular Verney's Duodecimal Chess.

Despite its unlikely origins, Verney's chess is a surprisingly good game. Extra pieces are two unicorns (B+N), king's councilor (K+N), queen's fool (non-royal K). In the original game, Ks are on the g file, councilors on h and fools on e; the circular variant, like all the rest, follows the array of Modern Circular Chess. Since Verney mentioned no rule on castling, Markov (2019) suggested the same castling rule as for reformed Turkish Great Chess (Markov & Härtel 2020); there is no castling in the circular version.

Circular draughts

As with the rectangular boards, the circular ones introduced above could also be used for all kinds of draughts variants on 64 (e.g. Russian, Brazilian, or Turkish), 80 (Spantsireti's: basically Russian draughts on a 10x8 board, see Spantsireti 1989), 100

(International, Frisian) and 144 (Canadian) spaces, following the same principle as for the chess variants: pieces move around the centre in both directions, promoting at 12 and 6 o'clock. For the circular draughts variants, however, the "a1" square is black where it is in the original games (Fig. 8).
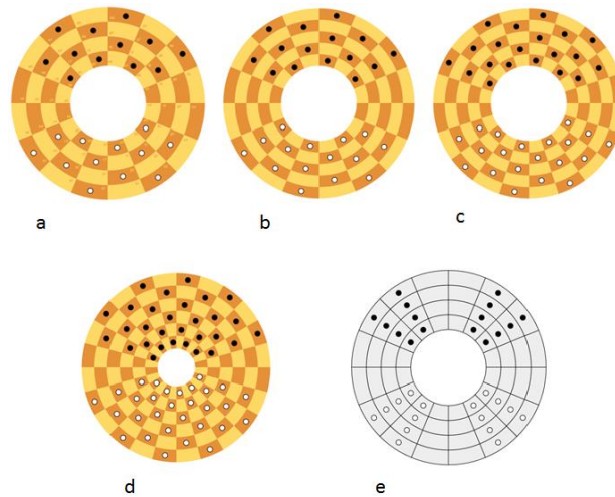

Fig. 8. Circular draughts on a) 64, b) 80, c) 100 and d) 144 boards, including circular Turkish draughts (e).

Imperial Fortress Chess

Markov & Härtel (2020) suggested replacing the all too powerful amazon or superqueen with a RNK compound, or "short" superqueen (or crowned empress / crowned knighted rook) for their reformed Turkish Great Chess rules. Roughly contemporaneous with the original Turkish Great Chess was Russian four-handed fortress chess, a game for four players with fortresses containing an extra RBN for each player (which, incidentally, are the pieces adding to amazon, a piece both Russian and Turkish chess experimented with at some point). Rules for the latter game were described by Petroff (1850) and recently discussed by Markov (2015). Combining the two games results in a large four-handed variant, for which the name Imperial Fortress Chess seems convenient – or at least more convenient than "Great Turkish-Russian four-handed fortress chess" (Fig. 9).
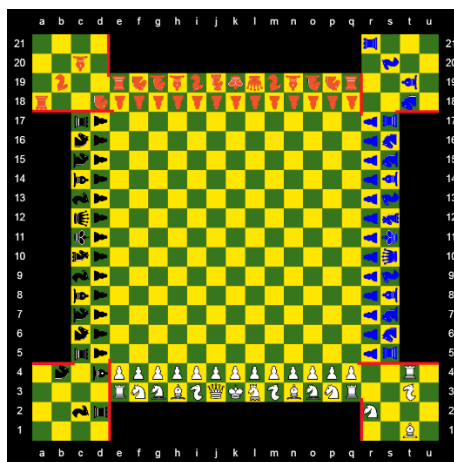
Fig. 9. Imperial Fortress Chess, initial array.

Compared to Turkish Great Chess, the setup is slightly different, with the RBNRh array of the former replaced by RNRhB – an idea taken from Verney's Duo-decimal Chess in fact, thus having the Rh pawn on the queen's side protected, while keeping the colourbound pieces, bishops and gazelles, on different colours. Rules follow those for Russian four-handed fortress chess (Markov 2015) except castling is "reformed Turkish" (see above); in addition, when castling towards the fortress, the king can continue its move along the rank as deep into the fortress as possible if not blocked by any pieces.

CheZ99 and Tetrachez

While all the games presented so far illustrate what is probably the laziest approach to creating game variants, namely by cross-breeding already existing games, Chez99 started almost as a joke, intended as a game that would use material and concepts from different chess variants while deliberately violating some of the basic principles common to all chess games. Ideas taken from orthochess, shogi, janggi, citadel shatranj and Russian fortress chess surprisingly resulted in something resembling Burtsev's Chess, a Russian 9x9 variant from 1957 (Pritchard 2007, p. 126) in some aspects. The following rules were finalized in 2012 by the two of us: Game played on a board with 99 squares, 9x9 with two 3x3 fortresses on each player's right side, thus the board is Z-shaped. (Fig. 10).
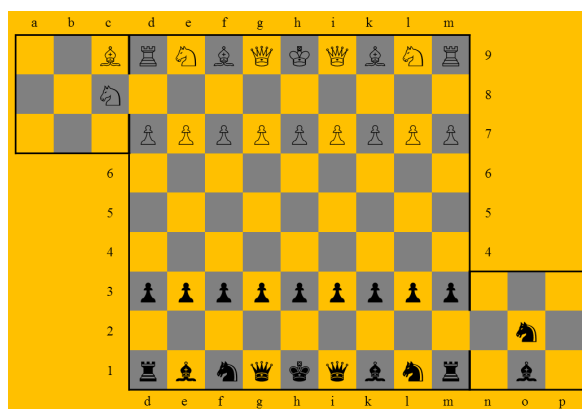
Fig. 10. Chez99, initial array with randomly placed pieces in the fortresses and exchanged places of Black's knight and bishop on the left flank.

Pawns are arranged on the third rank, extra B and N randomly positioned within the fortress. Before the start of the game, the player can exchange the positions of N and B on one or both flanks (as in janggi). Black moves first. Pawns move one square forward (no double step) and capture diagonally (as in orthochess, by moving to a square diagonally in front of it on an adjacent file). Upon reaching the opponent's third rank (7 for Black, 3 for White), a pawn can move and capture one square left, right or forward orthogonally, as well as diagonally forward. It cannot move backward, orthogonally or diagonally, with one exception: a pawn that has reached the square of the opponent's first rank that is adjacent to the fortress can move one square diagonally backward and enter the opponent's fortress (i.e. d9-c8 for Black and m1-n2 for White). A pawn is only promoted to a king upon entering the opponent's fortress (from any of the three squares adjacent to it, d7, d8 or d9 for Black and m1, m2 or m3 for White).

Queens, rooks, bishops and knights move and capture as in orthochess. The walls of the fortresses are impenetrable and cannot be leapt over by any figure. Thus, a definition of the knight's move is necessary: it consists of one orthogonal and one diagonal step in any order, i.e. it is not L-shaped. The king moves and captures one or two squares in any direction (leaping over other pieces but not the fortresses' walls), or as a knight. There is no castling. There is no check, and no obligation to get the king out of check, i.e. it is legal for a player to make a move that would put or leave his own king under threat of capture. There are three ways to win the game in CheZ99: by capturing the opponent's king (three points); by moving one's king (including promoting pawn) into the opponent's fortress (two points); by baring the opponent's king (i.e. capturing all the opponent's pieces except the king) (one point).

The game ends immediately after the move leading to one of these three situations, regardless of the opponent's potential next move. In other words, a player may capture or bare the opponent's king with his own king, or move his king into the opponent's fortress regardless if the king is threatened on the next move; a player can also move a pawn into the opponent's fortress (where it immediately promotes to a king) and thus win the game by two points regardless if the promoting pawn, or the original king, are threatened by capture on the next move. There is no draw. There is no stalemate (making a move that would put one's king under threat is legal), threefold repetition is forbidden.

Tetrachez is the four-handed version of the above, played on a board with 225 squares (15x15), with a 3x3 fortress in each corner (Fig. 11).
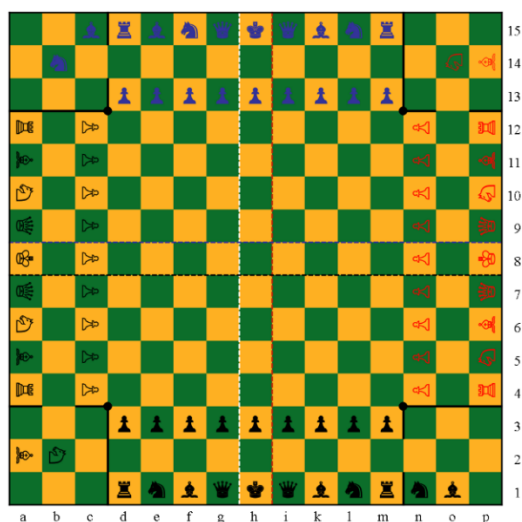

Fig. 11. Tetrachez, initial array with randomly placed pieces in the fortresses and exchanged places of knight and bishop on neither (Black), both (White), or one of the flanks (Blue and Red).

Players at opposite sides are partners, Black and Blue playing against White and Red. Black is the first to position his knights and bishops in the fortresses as well as on the flanks, with the other players following clockwise. After all four players have placed their pieces, Black moves first, and play continues clockwise. Pieces move and capture as in orthochess, except for pawns and kings. Pawns move one square forward (no double step) and capture diagonally (as in orthochess). Upon reaching the board's midline (eighth rank for Black and Blue, h file for White and Red), a pawn can move and capture one square left, right or forward orthogonally, as well as diagonally forward. A pawn reaching the allied fortress is promoted to a king. The king moves and captures one or two squares in any direction, leaping over other pieces, or as N.

There is no castling. There is no check, and no obligation to get the king out of check. The walls of the fortresses are impenetrable and cannot be leapt over by any figure. Thus, a definition of the knight's move is necessary: it consists of one orthogonal and one diagonal step in any order, i.e. it is not L-shaped. The main object of the game is to capture all the opponents' kings, resulting in a two-point win. The game stops immediately after a team's last king is captured, regardless if an opponent's king could be captured on the next move, i.e. a team can use its last king to capture the opponents' last king even if it is protected by another piece. If a player's king is captured, and his team has still at least one king on the board, he continues to play with his remaining pieces (regardless if these are pawns, i.e. potential kings, or not).

The player is out only after his last piece is taken, his partner continuing alone for the rest of the game. If a king enters any of the two enemy fortresses, the game ends immediately, even if the king is threatened, with a one-point win for the team that has played its king into the enemy fortress. There is no draw in Tetrachez: there is no stalemate (making a move that would put one's king under threat is legal), threefold repetition is forbidden, and if there is no sufficient material to capture the last king of the opponent(s), the game can still be won by moving a king into the enemy fortress.

Discussion and conclusions

All the games presented above are not, strictly speaking, "original" – in any of them there is not a single original piece, or rule (with the possible exception of castling into the fortress in Imperial Fortress Chess and some deliberately deviant rules of CheZ99 and Tetrachez) and yet, technically, they are 'new', each particular combination of rules making them distinct from other chess and draughts variants. Are they "better" or "worse" than the parent games, or, in other words, are they a case of hybrid vigour or, rather, outbreeding depression? Chesquerque with its non-leaping pieces provides a rare opportunity to use the otherwise all too powerful amazon of Turkish Great Chess (and other games), and the 13x13 board looks like it was created for a piece moving one step diagonally then two orthogonally (the gazelle, or camel). On a circular chess board, a bishop is weaker than a knight (increasingly less so the larger the board becomes), so the B+N compounds of Janus, Decimal Moldovan, and Verney's Duodecimal Chess are humbler there; circular draughts variants lack the long diagonal with all the consequences of that; Imperial Fortress Chess has an initial array that leaves no pawns unprotected (unlike Turkish Great Chess),

and a larger variety of pieces than Russian Fortress Chess. Again, does that make them "better"? It is difficult to judge without playtesting by as many different players as possible (something anyone who has created a game would like). In that aspect, traditional games have an obvious advantage, due to the number of players and time periods involved.

Neil Gaiman, speaking of folk tales and fairy stories in the introduction to his 2006 collection *Fragile Things*, observed that all stories started somewhere, in someone's head, and it is probably similar with traditional games – they have doubtlessly been modified along the way, and we do not know where the original ideas came from, but, like all stories, all games started in someone's head. If they work, they get played.

Acknowledgements

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Addendum

While this paper was in press, we've been experimenting with games on a 14x10 board, originally introduced for the Duke of Rutland's Chess (see Pritchard 2007, p. 126 and p. 197)[2]. While the original 1747 game is hardly fascinating, Charles Gilman's Modern Manners from 2004, which replaces the extra bishops and knights

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2 Pritchard's entries on Duke of Rutland's Chess and "Philidor and Stamma's 140-square game" apparently refer to the same game via different intermediary sources.

with crowned bishops and a B+N compound in a much more symmetrical array, is a significant improvement (https://www.chessvariants.com/other.dir/n_europe.html retrieved 06.06.2022; note that despite the 14x8 diagram, Gilman's text clearly indicates a 14x10 board). Taking Modern Manners as a starting point and adding some aspects of reformed Turkish Great Chess, we suggest the following variant (Fig. 12).
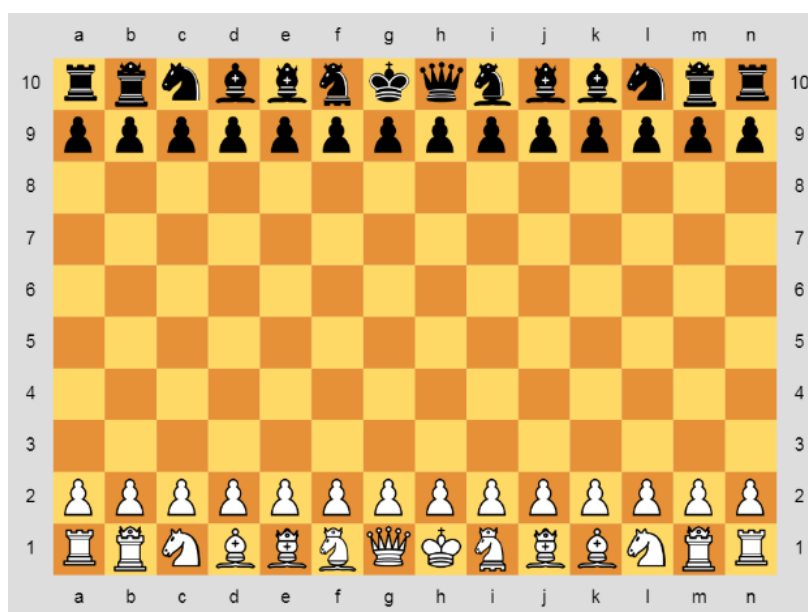

Fig. 12. Reformed Duke of Rutland's Chess, initial array.

Crowned Rs and Bs move as R+K and B+K respectively, shad

[3] (i1, f10) as R+K+N, yabghu (f1, i10) as B+K+N. Orthochess rules apply, except no initial double pawn move and castling reformed Turkish. Alternatively, the game can be played with pawn moving up to three squares on its first move, and the central pieces opposite rather than crosswise. Another possible setup would be RHiNBStYQKSStBNHiR, with hipparions (Hi)[4] moving as knight or wazir (i.e. one

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3 Introduced as "short" superqueen in reformed Turkish Great Chess (Markov & Härtel 2020), the shad and its counterpart the yabghu correspond to Jörg Knappen's 2009 Teutonic Knight's Chess archchancellor and crown princess (https://www.chessvariants.com/rules/teutonic-knights-chess retrieved 06.06.2022).

4 Corresponding to R. Betza's NW piece and its counterpart the stegodon to Betza's FAD piece.

square orthogonally), stegodons (St) leaping one or two diagonally or two orthogonally, and shad and yabghu as above. Following the approach outlined above, each of these, including Gilman's game, could be transferred to a circular board of 140 cells; both the rectangular and the circular board could be used for draughts variants (e.g. enhanced Spantsireti's, or International, etc.). In addition, a 14x10 board is useful for two-handed fortress versions of decimal chess variants, in the manner suggested by Markov (2015, p. 48) for a 12x8 board (our experiments show that, whatever the size of the main board, fortresses larger than 4x4 – or 4x5 on a 14x10 board – are hardly necessary).