

Thoughts on the origins of shatranj and xiangqi

John Beasley, December 2017 (revised January 2018)

It has long been thought that shatranj (the old Arabic chess as played before the invention of the modern queen and bishop) and xiangqi (classical Chinese chess as still played today) must have been developments of an ancient protochess of which no direct evidence has survived. For example, in David Pritchard's *Encyclopedia of Chess Variants* we read (first edition page 345, second edition page 248): "That xiangqi and orthochess [the modern successor to shatranj] have a common ancestor cannot be doubted, similarities between the two games being many and remarkable." Until very recently I subscribed to this view myself, but now I have come to question it.

Anybody with experience of the invention of puzzles knows that the same idea often occurs independently to different people. I myself have published a chess endgame study in good faith, believing it to have been original, only to be told by the next post that an identical position had appeared in a Russian magazine in 1940; conversely, I have opened my morning paper to find, presented as a new discovery, a bridge problem which I had published fourteen years previously. (It might be added that both the newspaper columnist and the rediscoverer behaved impeccably, and unhesitatingly and indeed handsomely acknowledged the prior discovery as soon as they became aware of it.) Many other examples could be cited. Let me stress that we are talking about honest independent rediscovery; there is no suggestion of deliberate plagiarism;

The reason that puzzles invented independently can agree so exactly is that a puzzle usually has one or a small number of optimal forms (most natural, most economical, most logical, most piquant) and that two inventors working independently may well home in on the same setting. Much the same is true of games; given an idea for a new game, a few trials normally show which realisations work badly and which work well. A game which survives for any length of time will surely be in a form which works particularly well.

In the light of this, what follows will examine the possibility that shatranj and xiangqi, despite the obvious similarities in the make-up and initial arrangement of their officer corps, in fact developed quite independently.

The basic elements elements of a chess game

We can identify several basic elements of a chess game.

- It is played with a board and men.
- There is a rule by which men are captured.
- Each side has a king with limited powers of movement, whose capture is the object of the game.
- Each side has an army of foot-soldiers with a limited move.
- Each side has one or more officers with other moving powers.

Any game possessing these elements is recognisably a chess game.

The realisation of these elements in shatranj and xiangqi

In shatranj and xiangqi, these elements are realised as follows.

- Shatranj is played on a plain board of 8 x 8 squares. Xiangqi is played on the intersections of a rectangular array of 10 x 9 lines, with a river across the middle and a palace at each end.
- In each case, there is capture by displacement.
- The properties of the kings are quite different. The king in shatranj can move one step orthogonally or diagonally in any direction, The king in xiangqi can move only one step orthogonally and is confined to the palace, and there is a rule that the kings may not be placed opposite each other with no intervening man. In each case, capturing the opponent's king wins the game, but in shatranj a player who is stalemated may transpose his king and any other of his pieces. Additionally, in shatranj a player can win by baring his opponent's king.
- In each case, a player has an army of foot-soldiers, but their number, initial disposition, and powers of movement and capture are quite different.
- In each case a player has (a) two pieces with a rook's move, (b) two pieces with a knight's move though in shatranj this piece can leap whereas in xiangqi it makes an orthogonal move followed by a diagonal move and the intervening point must be empty, (c) a piece (two in xiangqi) which moves one step diagonally and in xiangqi is confined to the palace, and (d) two pieces which move two squares diagonally (in xiangqi the intervening point must be empty, and they cannot cross the river). Additionally, in xiangqi each player has two "cannon" pieces which have no parallel in shatranj.

The composition and initial disposition of these officer corps

The board sizes and layouts, the properties of the kings, and the numbers, initial dispositions, and properties of the armies of foot soldiers are so different that any claim that shatranj and xiangqi are descended from a now lost common original must depend on the remarkable similarity in the composition and initial disposition of their officer corps. Let us therefore look at how likely it might be that groups working independently could have arrived at officer corps so similar.

- Given a square lattice board, it is natural to have a long-range piece moving along the lines of the lattice.
- However, a long-range piece with a diagonal move is viable only if the board is accurately drawn and if possible chequered. Their absence from early forms of the game, when unchequered boards will have been drawn *ad hoc* on convenient scraps of writing material, or even scratched in the earth or sand, is to be expected.
- From any given starting square, the piece with a long-range orthogonal move covers the squares at distance (1,0) and (2,0). The knight or its equivalent covers the squares at distance (2,1). In the absence of a piece with a long-range diagonal move, the moves of the remaining officers of shatranj, and of the equivalent officers of xiangqi, are just those which are needed to cover the squares at distance (1,1) and (2,2), and so to give a move to every square within two squares of the departure square.

This will therefore have been a natural and logical officer corps to try.

As regards the initial disposition of these officers, consider the following.

- In those days kings led their armies personally into battle, so it was natural to put the king in the centre.
- It will have been very quickly realised that a short-range piece starting in the corner was inconveniently far from the action, and that it was best to start with the one-step movers in the centre of the array, the two-step movers next, and the long-range pieces in the corner.
- The only remaining question was whether to put the knights inside or outside the (2,2) movers (let us call these elephants for convenience). However, if we put the knights inside the elephants (Nc1, Eb1) they both develop most naturally to d3; if the elephant gets there first the knight has to develop to a less effective square, and if the knight gets there first the elephant is left without a move. If we put the knights outside the elephants, they naturally develop to different squares on the third rank, and do not impede each other.

The actual shatranj and xiangqi arrays (apart from the xiangqi cannon, which would seem to have been a later addition) are thus seen to be natural and logical choices which could well have been arrived at by groups working independently..

Summary and conclusion

The differences between the size and layout of the boards, the properties of the kings, and the numbers, dispositions, and movement and capturing properties of the foot soldiers, are evidence that shatranj and xiangqi evolved independently. The similarity between the make-up and initial arrangement of the officer corps (apart from the xiangqi cannon) appears to be evidence that they had a common ancestor. However, we have seen that this make-up is a natural and logical one, and a small amount of trial and experiment would have caused players to decide that the initial arrays now adopted were the best to use. So these similarities are not the overwhelming evidence they might seem that shatranj and xiangqi had a common ancestor.

It is of course quite possible that two games, initially developed independently, should take ideas from each other once their playing communities came into contact. However, on the evidence of their rules of play, I now find it much easier to believe that shatranj and xiangqi evolved independently than that they descended from a lost common ancestor, let alone that one arose as a mutation of the other.