GAME OF STRATEGY HAVING DIVIDABLE GAME PIECES

Inventor: Zachary Brown, New York, NY (US)

Correspondence Address: PATENT GROUP 2N JONES DAY NORTH POINT, 901 LAKESIDE AVENUE CLEVELAND, OH 44114 (US)

Appl. No.: 12/624,849
Filed: Nov. 24, 2009

Related U.S. Application Data
Provisional application No. 61/117,948, filed on Nov. 25, 2008.

ABSTRACT

A game of strategy includes a plurality of game pieces that are dividable into smaller game pieces. The game pieces initially comprise some in a first color and some in a second color. The game pieces are arranged in a pattern on a playing surface to define a playing field. Each of the pieces has a legal shape such that the pieces may only be divided into legal shapes. The game pieces may be one or more of divided, joined, swapped and captured during play. A process for playing a game of strategy is also described. A winning position for a game of strategy includes a contiguous chain of game pieces of a single color that extends from one or both of the left side to the right side and the top side to the bottom side of a playing field. A notation system for describing the moves of play is also described.
Fig. 7a

Fig. 7b

Fig. 8a

Fig. 8b

Fig. 9a

Fig. 9b

Fig. 9c

Fig. 9d

Fig. 10

Fig. 11
Fig. 43

Fig. 44

Fig. 45
GAME OF STRATEGY HAVING DIVIDABLE GAME PIECES

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application No. 61/117,948 filed on Nov. 25, 2008, the disclosure of which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] This technology relates to a game of strategy that includes game pieces that are dividable into smaller pieces, joinable into larger pieces, and replaceable among one another from a starting position, to a plurality of intermediate positions, to a winning position.

BACKGROUND

[0003] Known games of strategy include chess and checkers. Each has their own rules with many exceptions to the rules.

SUMMARY

[0004] A strategy game is shown and described.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 depicts an example of neighboring pieces of the game;
[0006] FIG. 2 depicts another example of neighboring pieces of the game;
[0007] FIG. 3 depicts an example of pieces that are not neighboring;
[0008] FIG. 4 depicts another example of pieces that are not neighboring;
[0009] FIG. 5 depicts an example of legal size pieces and non-legal size pieces of the game;
[0010] FIG. 6 depicts the starting position of the pieces of the game;
[0011] FIG. 7a depicts an example of splitting a game piece during play;
[0012] FIG. 7b depicts another example of splitting a game piece during play;
[0013] FIG. 8a depicts an example of splitting of multiple game pieces during play;
[0014] FIG. 8b depicts another example of splitting of multiple game pieces during play;
[0015] FIG. 9a depicts an examples of joining of game pieces during play;
[0016] FIG. 9b depicts another example of joining of game pieces during play;
[0017] FIG. 9c depicts yet another example of joining of game pieces during play;
[0018] FIG. 9d depicts a further example of joining of game pieces during play;
[0019] FIG. 10 depicts examples of pieces that may swap with one another because of the borders they share;
[0020] FIG. 11 depicts examples of pieces that may not swap with one another because they are not two-point neighbors;
[0021] FIG. 12 depicts an example move of the black player that involves splitting and swapping in progression;
[0022] FIG. 13 depicts another example move of the black player that involves splitting and swapping in progression;
[0023] FIG. 14 depicts the pieces of the game after the black player has positioned his or her pieces to capture a single white player’s piece;
[0024] FIG. 15 depicts the pieces of the game after the black player has positioned his or her pieces to capture multiple white player’s pieces;
[0025] FIG. 16 depicts the pieces of the game after the black player has positioned his or her pieces to capture multiple white players’ pieces;
[0026] FIG. 17a depicts a starting position of an example move of the black player that involves splitting, swapping, and capturing in progression;
[0027] FIG. 17b depicts a move from the starting position shown in FIG. 17a;
[0028] FIG. 17c depicts a move from the position shown in FIG. 17b;
[0029] FIG. 17d depicts a move from the position shown in FIG. 17c;
[0030] FIG. 17e depicts a move from the position shown in FIG. 17d;
[0031] FIG. 17f depicts a move from the position shown in FIG. 17e;
[0032] FIG. 17g depicts a move from the position shown in FIG. 17f;
[0033] FIG. 17h depicts a move from the position shown in FIG. 17g;
[0034] FIG. 17i depicts a move from the position shown in FIG. 17h;
[0035] FIG. 18 depicts the pieces of the game after a first turn has been taken by the black player;
[0036] FIG. 19 depicts the pieces of the game after many turns have been taken by both black and white players, but not in a winning position;
[0037] FIG. 20 depicts an example position where the black player is about to move and win the game;
[0038] FIG. 21 depicts the black player’s winning move from FIG. 20;
[0039] FIG. 22 depicts the pieces of the game after an alternative first turn has been taken by the black player;
[0040] FIG. 23 depicts the pieces of the game in the middle of play, with neither the black player nor the white player about to move into a winning position;
[0041] FIG. 24 depicts the pieces of the game at a later time than is shown in FIG. 23, with the White player about to move to win the game;
[0042] FIG. 25 depicts the pieces of the game after the White player has made a move from FIG. 24 to win the game, showing the winning position;
[0043] FIG. 26 depicts an example location used in notating a move in the example game;
[0044] FIG. 27 depicts another example location used in notating a move in the example game;
[0045] FIG. 28 depicts another example location used in notating a move in the example game;
[0046] FIG. 29 depicts yet another example location used in notating a move in the example game;
[0047] FIG. 30 depicts another example location used in notating a move in the example game;
[0048] FIG. 31 depicts a further example location used in notating a move in the example game;
[0049] FIG. 32a depicts a starting position for a join;
FIG. 32b depicts an ending position in the same playing field as FIG. 32a after pieces have been joined; FIG. 33a depicts the playing field before pieces are joined; FIG. 33b depicts the same playing field as FIG. 33a after pieces have been joined and then swapped to the West; FIG. 34a depicts the playing field before pieces are split on a vertical split-line; FIG. 34b depicts the same playing field as FIG. 34a after the pieces have been split on a vertical split-line and swapped to the East; FIG. 35a depicts the playing field before pieces are split on a horizontal split-line; FIG. 35b depicts the playing field of FIG. 35a after pieces have been split on a horizontal split-line and swapped to the East; FIG. 36a depicts the playing field before pieces are split along a horizontal split-line; FIG. 36b depicts the playing field of FIG. 36a after pieces have been split and the northern most split piece is swapped to the West; FIG. 37a depicts the playing field before multiple pieces that are positioned adjacent one another are split horizontally; FIG. 37b depicts the playing field of FIG. 37a after multiple pieces have been split; FIG. 38a depicts the playing field before multiple pieces that are not positioned adjacent one another are split vertically; FIG. 38b depicts the playing field of FIG. 38a after multiple pieces are split vertically; FIG. 39 depicts the playing field of FIG. 38b after multiple pieces have been split vertically and illustrates a series of swaps that are performed on the lower, East split piece, with swaps occurring in the East, North, and East directions; FIG. 40 depicts the playing field of FIG. 38b after multiple pieces have been split vertically and illustrates a series of swaps that are performed on the lower, West piece, with swaps occurring in the North, West, and North directions; FIG. 41 depicts the playing field of FIG. 38b after multiple pieces have been split vertically and illustrates a series of swaps that are performed on the upper, East piece, with swaps occurring in the East, South, and East directions; FIG. 42 depicts the playing field of FIG. 38b after multiple pieces have been split vertically and illustrates a series of swaps that are performed on the upper, West piece, with swaps occurring in the West, South, South, and East directions; FIG. 43 depicts a golden rectangle; FIG. 44 depicts a silver rectangle; and FIG. 45 depicts an A4 rectangle and the various ways that an A4 rectangle can be split.

DETAILED DESCRIPTION

The example game is a turn-based strategy game for two players that includes a plurality of pieces. The pieces, in the examples depicted, include a plurality of tile-like pieces that are rectangular. The pieces are two different colors, such as black and white. A first player controls the black pieces 10 and a second player controls the white pieces 12. Each player tries to connect their pieces into chains of neighboring pieces. The tile-like pieces may be laid out on a game board, on a table top, or on any flat surface in order to define a playing field. The playing field may be rectangular, including square. There may be instances where one of skill in the art may define the playing field in a non-rectangular manner. A game board is not absolutely necessary, but may be used if desired. A game board may be designed and provided that helps to maintain the pieces in the shapes shown in the figures.

The pieces are positioned adjacent one another and can be “squared” against one another periodically, as desired, during play. The pieces may be squared against one another by closing any gaps between the pieces by pushing them together, such as by pressing the outer edges of the playing field together. A tool can be designed to assist with squaring. Such a tool may be a straight edge of sturdy material or a ruler-like apparatus.

The example game includes legal shaped pieces, which are either square or rectangular. For ease of description, a square is defined herein as having equal length sides, a rectangle is either a square or a rectangle, and a 2 L rectangle 14 is a rectangle where the length is twice as long as the width. These two shapes fill the entire playing field at all times. In an alternative example, which is not shown, other shapes may also be “legal,” such as a 1x4 rectangular shape in addition to or instead of the other previously mentioned shapes. Other shapes may also be utilized, as will be readily evident to those of skill in the art.

One concept of the game relates to the use of neighboring pieces. In order to win, one player’s pieces must neighbor each other in chains that touch all four sides of the game board at one time. Examples of pieces 16 that are considered to be neighboring are shown in FIGS. 1 and 2. Pieces 18 that are not considered to be neighboring are shown in FIGS. 3 and 4.

The game involves a series of legal moves. Legal moves involve splitting or dividing legal pieces into smaller legal pieces, joining several pieces together to define larger legal pieces, or swapping pieces with your opponent’s pieces. Legal pieces may be split, over multiple turns, into significantly smaller pieces. Smaller pieces may be joined together to create significantly larger pieces. There is no limit on the size of the pieces, other than pieces cannot be larger than the size of the playing field. In the examples depicted in FIGS. 1-42, the pieces at all times must have a legal shape of either a square or a rectangle that is twice as long as wide. Very small pieces may be positioned next to very large pieces. Examples of legal 20 and non-legal 22 size pieces are shown in FIG. 5.

Typically, the example game is played by two players. In the depicted examples, each game piece is either black or white. Alternately, the pieces could simply be two different colors, like blue and red or pink and purple. The example game is not limited to a particular color, as long as one player’s game pieces are a first color and another player’s game pieces are a different, second color. For simplicity in describing the example game herein, black and white will be the colors used to describe the first and second player’s game pieces.

A piece can never be both white and black. However, pieces in the playing field may regularly change color by swapping or switching the color of the pieces with the color of a piece of the other player.

In order to allow pieces to be divided or split, each player has a supply of smaller, legal-shaped pieces. For example, if a larger square piece is to be split in half into two smaller, rectangular pieces, the player would remove the
larger, square piece from the playing field and replace it with two smaller, rectangular pieces that together are the same size as the removed piece. For another example, if an arbitrary number of smaller pieces together form the shape of a legal piece 20, the pieces may be combined into a single piece by joining them together. In this instance, the smaller pieces would be removed and replaced by a single, larger piece.

While the above example involved splitting a piece into two legal shaped pieces, an alternative example could involve splitting a playing piece into a combination of legal shaped pieces. For example, a square piece could be split into four smaller squares, eight smaller 2 L rectangles, two squares and four 2 L rectangles, etc.

One starting position 24 for game play includes 18 white squares and 18 black squares, all the same size, laid out in a 6 by-6 checkerboard pattern. This is shown in FIG. 6. Other example patterns for starting pieces may be a 3 by-8 checkerboard pattern, an 8 by-8 checkerboard pattern, or other similar patterns (not shown), the invention not being limited to a particular pattern.

In order to play the example game, players take turns moving, such as in chess. Either black or white may move first, but for ease of description herein, black will typically be designated to move first. Players may use any method they like for determining who gets black and who gets white. Each player may resign at any point, or both players may agree to declare a draw.

With the game board layout of FIG. 6, game play begins with either a single "split" or a single "join." A player cannot pass so each turn results in a distinct change in position on the playing field. A "split" is a move where a player takes their own piece and splits it into two smaller legal pieces. For example, a player may divide a square piece in half into two 2 L rectangles or a 2 L rectangle may be divided in half into two squares. Splits may affect multiple pieces, as will be explained in greater detail below. A "join" is a move where a player takes several pieces and replaces them with a larger legal-shaped piece. The player may only split once or join once per turn and this must be the first move. Splits and joins may be followed by swaps, which will be described in greater detail below.

In the starting position 24 shown in FIG. 6, only a single piece may initially be split. With other examples, where the pieces do not start out in a typical checker board pattern, it may be possible to split more than a single piece during the first move. As the game progresses, multiple pieces may be split in a single turn depending on the pieces’ placement on the playing field. During a turn, a player’s pieces may be split or divided in two, so long as the two remaining pieces have a legal shape. Examples of splitting are depicted in FIGS. 7a and 7b. As previously discussed, a square piece 26 may be split into two 2 L rectangles 14 and a 2 L rectangle can be split into two squares 26. However, a 2 L rectangle 14 cannot be split lengthwise into two thinner rectangles, because those rectangles would then be more than twice as long as they would be wide.

Splitting multiple pieces is an extension of splitting a single piece. This involves extending the line of the split ("split-line") of a single piece split. If the split-line 28 of a single piece is extended, a variety of scenarios may occur, some of which involve legal moves and other’s of which would not be legal. These scenarios include:

1. Extended split line 28 will intersect piece belonging to the opposing player;

2. Extended split line 28 will hit edge of playing field;

3. Extended split line 28 will follow along border between two pieces;

4. Extended split line 28 will intersect one of the player’s own pieces, but not in such a way that creates two legal pieces; or

5. Extended split line 28 will bisect the player’s own pieces in such a way as to produce two legal pieces.

In the first, second, and fourth cases, the split-line 28 is not allowed to pass through the opposing player’s pieces or the edge of the playing field, or a friendly piece that would not be split properly, as the split would not be extended to those positions. In the third case, the split line 28 is allowed to follow the border between pieces until it comes upon the other four possibilities listed. In the fifth case, a multi-piece split may occur so that both the initial piece is split and one or more other pieces are also split. The split occurs along a single split-line 28 and includes pieces immediately adjacent the initial piece or following the border between pieces until it intersects other pieces of that player’s. As many pieces as desired may be split until an obstruction, as identified above, has occurred. An obstruction defines the end of the split-line 28. The split-line 28 does not have to extend all the way to the obstruction. The player may stop the splitting of pieces at any point along the split-line 28. Examples of splitting multiple pieces are shown in FIGS. 8a and 8b.

The ability to split multiple pieces in a single move via a split-line 28 gives players a powerful tool because it allows players to make a large change to the playing field. The split-line 28 is like a "laser," unable to burn its way through opposing pieces or the edge of the board, but able to continue in a straight line until it reaches an obstacle or until the player decides he or she has divided enough of their own pieces in two. Once the "laser" is turned on, it splits every piece it encounters until the player decides to turn it off. In other words, for as far as the player chooses to extend the split-line 28, all pieces must be split. A player cannot leave some pieces along the split-line 28 unsplit.

As an alternative to the rules described above, another example involves splitting a player’s own pieces even where the split line passes first through an opponent’s pieces. In addition, another example involves splitting an opponent’s pieces, in addition to or instead of splitting a player’s own pieces along a split line. Another alternative example involves allowing the split line to travel through pieces, but not splitting all pieces along the split line. In this example, the player may pick and choose which pieces to split along a single split line.

"Joins" occur when a player wishes to join several pieces together to form a single legal shape. Essentially, the player takes a number of pieces in the playing field and “dissolves” the borders between them to form a single legal piece. Examples of joining are depicted in FIGS. 9a and 9b. In practice, the player would remove the smaller pieces and replace them with a single, larger legal-shaped piece on the playing field. The piece has the same size and shape as the outer edge defined by the combined pieces being replaced.

In an alternative example, a join could include utilizing an opponent’s pieces in order to form a legal shaped playing piece, such that an opponent’s pieces are commandeered. For example, where a square space is occupied by four equal sized squares, three of which are black and one of which is white, in this example, the black player could join the
three black and one white piece to form a single black piece. The decision on whether a piece could be commandeered could be based upon percentage of color (such as greater than 50% of one color allows a player to commandeer) or other rules. Other variations are also possible, as will be readily evident to those of skill in the art.

An alternative joining method could involve joining pieces into multiple legal shaped pieces, rather than joining multiple pieces into a single legal shaped piece. For example, six legal shaped square pieces that are arranged in a rectangular shape could be joined into a larger square that occupies the space previously occupied by four of the squares and a 2 x 2 rectangle could replace the remaining two squares such that a square and a 2 x 2 rectangle remains where previously six squares were present.

After a player has performed their “split” or “join,” they have the option to perform a swap. Swapping is wholly voluntary. A swap must involve one of the pieces that results from the split or join in the previous phase of the player’s turn. In other words, whenever a player moves, first they’ll operate on some cluster of pieces to do a split or a join, and then their turn may continue from that same cluster, swapping pieces in a chain out from that cluster, as explained below. Swaps must occur with contiguous pieces. The overall impression is therefore of a single action, in which some group of pieces are acted upon, and that action then continues in the form of a swap.

A single swap involves making one player’s piece turn into the opponent’s piece, and turning one of the opponent’s pieces into the player’s piece. What is meant by this is that the opponent’s piece turns into the color of the player’s pieces and the player’s pieces turn into the color of the opponent’s piece. To do this, the two pieces are “swapped” by changing their colors. Once a player has identified the piece of their own that they want to swap, the player can swap that piece with any opposing piece that borders it on a complete side. “Bordering on a complete side” means that one full side of the player’s piece must be entirely shared with one full side of the opponent’s piece. The shared sides must be not only substantially co-linear, but also the same length, and occupy the same space. FIG. 10 shows an example where pieces border on a complete side. When two corners of a single piece touch two corners of another piece, this is referred to as “two-point neighbors.” Two-point neighbors are two points along the border of two pieces that can be swapped with one another. FIG. 11 shows an example where pieces do not border on a complete side and are not two-point neighbors. Pieces that are not two-point neighbors may not be swapped with one another.

Swaps may occur in chains. In other words, once a player has performed a single swap, the player can take the new piece that has just become his or hers, and swap it with any other piece that meets the criteria discussed above for swapping. This can be performed as many times as the player would like. Once a player decides to finish swapping, their turn is over. Whenever players swap, each step that is taken along the swapping path is treated as a move of its own and it changes the configuration of color pieces on the board. If one of those steps wins the game for either player, then the turn ends and the game is over.

FIG. 12 shows an example move where the first player splits a black piece and then swaps one of the split pieces with the second player’s white piece. FIG. 13 shows another series of legal moves. In FIG. 13, the first player vertically splits a black piece and then proceeds to swap one of the black pieces first with a piece to the East, next with a piece to the South, next with a piece to the East, and finally with a piece to the North. So the end result is that the original black piece 30 ends up as a white piece 32 and the final piece 34 is black.

Although swapping, as described above, requires that the playing piece share an entire common side with an adjoining piece, an alternative example involves allowing swapping when a playing piece does not share an entire side. In this example, the sharing of a partial side is acceptable for swapping purposes. For example, if a playing piece is positioned on the edge of the playing field and doesn’t have room to become big enough to share a common side with an adjoining piece, the rules may allow the player to swap even though the piece does not have a common side with an adjacent piece. The same could hold true for captures, which are discussed in greater detail below.

In an alternative example, a player’s turn can involve any combination of splitting, joining, and swapping. For example, any of these moves can occur first. A player could be limited to splitting only pieces that were previously swapped. Alternatively, a player could be limited to operating on pieces that were not previously operated on during a prior move within that given turn. Many variations exist, as will be readily evident to those of skill in the art.

A scenario that may arise as a result of a swap on behalf of either player is a “capture.” In captures, a piece is captured when some of the player’s pieces completely surround the opponent’s piece or pieces. When this occurs, the surrounded opponent’s piece(s) become owned by the player and assume the same color as the player’s pieces. Capturing occurs during a move when one or more of the opponent’s pieces are surrounded on all sides by the captor’s pieces. Whether an opponent’s piece is surrounded sufficiently to allow for capture is defined by how the captor’s pieces border the opponent’s pieces.

There are four ways that two playing pieces may border each other:

(1) on a complete side, as described above in connection with swapping;
(2) on some part of a side, more than just touching at a corner, but not necessarily sharing a complete side together;
(3) on a complete side of the subject piece, while the adjacent piece is larger, but only shares a part of the side of the larger piece; and
(4) touching only at the tip of a corner.

If one player’s pieces form a loop around the other player’s pieces such that the player’s pieces border each other according to (1), (2), and (3) above, then any opposing pieces within that loop are ‘captured’, i.e. they change color to be that of the captor. This occurs automatically and is not a matter of choice. If the loop contains some pieces that only border, but not at the tip of the corner, then the loop is insufficient for capture purposes. Multiple pieces may be captured at a single time, even though they might not be positioned around the outer edges of the group or bordering the outer edges. The loop defines everything within itself that is captured. Capturing allows the bordering player to take over any pieces of the opponent that fall into the captured area. It should be noted that captures cannot be performed against the edge of a playing field—all four sides of a piece must be surrounded in order for a piece to be captured.

Captures are assessed after each swap in a swapchain. Thus, it is possible to perform several captures in a
given turn. It is also possible to swap into a given position solely in order to perform a capture, and then swap out again to a previous step along the swap chain, as part of the same turn. Captures are not part of moving, e.g. taking one's turn. They simply occur when an opponent's pieces are surrounded. A player can also swap into a situation where his or her own pieces may be captured. Captures are judged on a move-by-move basis. Examples of captures are shown in FIGS. 14-16. FIG. 14 depicts game play where a single piece 36 is captured. FIG. 15 depicts game play where multiple pieces 38 are captured. FIG. 16 depicts game play where multiple pieces 40 in an irregular pattern are captured.

[0109] An example turn of the first player is shown in progression in FIGS. 17a to 17h, which shows swapping and capturing within the same turn. The first configuration shown in FIG. 17a depicts the anticipated chain of movement for the turn. First, a black 2 L rectangular piece is split into two squares. Then the white rectangular piece to the East is swapped with the black square as shown in FIG. 17b. This results in a capture of the above white rectangle, as shown in FIG. 17e. The white rectangle becomes a black rectangle. The first player continues with another swap to the East, as shown in FIG. 17f. Again, the white square above is captured and becomes black, as shown in FIG. 17e. The first player continues by swapping to the East again, as shown in FIG. 17f. As a result of this move, the two lower black pieces are now surrounded by the second player's white pieces and become captured and turned to white, as shown in FIG. 17g. The first player then swaps with the rectangular piece to the South, as shown in FIG. 17b. This results in the black piece being captured by white, as shown in FIG. 17i.

[0110] It should be noted that the first player could have ended the turn before any of the swaps that resulted in capture. In addition, the first player could have swapped backwards into pieces that had already been swapped through in order to avoid capture.

[0111] An alternative example involves assessing captures only at the end of a swap chain, such that captures are not assessed on a move by move basis. Captures are not optional in the above described example, but may be optional if the rules are so defined. Where they are optional, the players may choose whether to capture on a move by move basis.

[0112] The captures described above involve capturing an opponent's pieces during each move in a swap chain. However, an alternative example involves assessing whether a player's own pieces are captured during the same swap chain, such that the black player's pieces can actually be changed to white pieces during the black player's turn. In another example, captures are only considered for pieces that are not currently being swapped during a player's move. In another example, capturing would only be permitted if the surrounding pieces share a complete side instead of a partial side.

[0113] A player wins the example game by getting all their pieces into a winning configuration or position. A winning configuration is one where a player's pieces touch each of the four sides of the playing field and form a continuous chain of bordering playing pieces, such as an "X" or cross pattern. The winning configuration is defined in terms of the border associations, as described above in connection with capturing. In order to form a winning configuration, one player must have pieces bordering each other according to at least one of items (1), (2), and (3) of the list described in capturing. In particular, the pieces must either border each other along a complete side and/or must be touching along one of the sides, not including touching at a corner tip. If pieces in the chain only touch at a tip, it is not considered to be a winning configuration. One set of bordering pieces must link the top and bottom edges of the playing field together, and another set must link the left and right edges of the playing field. Symbolically, this means that the opposing forces have been shattered into fragments, a fitting way to decide the winner.

[0114] As with captures, the winning condition is assessed after each swap in a chain. Thus, it is possible for one player to win on the other player's turn, just as it is possible for either player to have their own pieces captured on their own turn.

[0115] An alternative winning configuration could involve connecting the top to the bottom with a continuous chain, or connecting the sides with a continuous chain of pieces, instead of requiring both. Another alternative winning position could forego the continuous chain of pieces and simply involve assessing how much of the playing field is occupied by a given player's pieces. For example, a winning configuration could involve occupying 75% of the playing field, or 90% of the playing field, for example. Other examples are also possible. Another winning configuration could involve creating one or more pieces of a certain size, such as, for example, a large square or a large 2 L rectangle.

[0116] Yet another alternative winning configuration involves surrounding your opponent's pieces in such a way that they are surrounded, as with capturing. In this example, no capturing would be allowed during moves. The game may be won when a certain percentage or number of pieces are surrounded, as with the rules for capture, discussed above. Another example where no captures are permitted during normal play would involve a winning configuration where an opponent's pieces are surrounded in such a way that the pieces that are surrounded do not share a complete side with any of the surrounding pieces. Another winning position would require that all the pieces in the continuous chain share a complete side.

[0117] When a player reaches a winning configuration, all outstanding captures may then be performed, if desired, so that the players can determine the final position of the playing pieces. This is not required.

[0118] A draw may be declared at any time if both players agree. There is, however, one situation where a game is automatically drawn. This occurs if all the pieces that each player has split or joined on their most recent turn were also involved in splits or joins on that player's previous two turns, and if both sides have swapped into the same piece on the most recent turn and the previous two turns. When this occurs, the game is automatically declared a draw.

[0119] Each example game set contains a variety of different-sized pieces. When you decide to split a playing piece during the course of play, you take that piece off the board and replace it with two smaller pieces. The same is true of joining—you remove the smaller pieces and replace them with a larger piece. Playing pieces can be made from any type of material, including paper, cardboard, plastic, and the like. For example, playing pieces can be made with just paper and scissors, and players may choose to cut pieces during the course of play. If, during the course of play, a player wants to use a piece that is not available in the set of pieces they have at their disposal, it is permissible to take a reasonable amount of time to make the desired piece out of appropriate materials. Alternatively, a set of playing pieces may be provided in advance in various sizes so that there is little need to cut pieces during the course of play. Pieces may become arbitrarily...
small, so there may be times when the set of playing pieces is inadequate to handle all moves. In that instance, players may choose to cut the playing pieces to provide the proper size and shape. However, players can do whatever they want to effect the physical splitting of pieces. For more casual play, players may agree in advance to restrict the legal set of pieces to only those that are available to play with.

[0120] In an alternative example, captures could be prohibited or joins could be prohibited. Rules could exist where joins and captures are only permitted during certain times or for the first several minutes of play. Other variations are possible.

[0121] Referring again to the figures, FIG. 6 represents a starting position 24 where the playing pieces are arranged in a 6×6 checkerboard-like grid. The playing pieces are flat, tile-like pieces in contrasting colors. They may be positioned on a flat surface, such as a game board surface or a table-top. All of the playing pieces are the same size in the starting position and are square. There are 18 darker color or black pieces 10 and 18 lighter color or white pieces 12. If an underlying board is being used in FIG. 1, it is completely obscured by the playing pieces. An underlying board could be used that defines a grid and that has a larger footprint than the game pieces themselves (not shown). A board could also be provided where the game pieces are separated from one another by small spacing (not shown).

[0122] FIG. 18 shows the playing pieces after a first move has been made by the black player. In this case, the black player splits a square playing piece 40 into two rectangular pieces 42, 44. This creates a common side surface 46 with white playing piece. The black player then, after splitting, swapped with the adjacent white piece such that white piece became black piece 48 and previously black piece became a white piece 42.

[0123] FIG. 19 depicts a playing field 10 and playing pieces after many pieces have been swapped, split and joined. The game pieces in FIG. 19 are at an intermediate position, with both black and white threatening to win in the next move. If one player is unable to prevent their opponent from winning on their next turn, that player is said to be in “crumble-mate.” Unlike in chess, it is not necessary to announce crumble-mate. The game doesn’t end at mate, it ends when all four sides of the playing field are connected.

[0124] FIG. 20 depicts the playing field where the black player is about to move and win the game and FIG. 21 represents the same playing field as FIG. 20 after the black player has made the winning move. As is shown by the line 50 of black pieces in FIG. 20, the black player has connecting pieces that form a left arm 52 that touches the left side 54 and a bottom arm 56 that touches the bottom side of the grid. There are also a number of black pieces along line 50 that extend upwardly to the top side and to the right, but that do not have connecting surfaces that join them to the top and right sides.

[0125] In order to move from the playing field in FIG. 20 to the playing field in FIG. 21, the black player first joins pieces 60, 62 and 64 into a single square piece 66. Then the black player swaps in a swap chain the black piece with white pieces 68 and 70 such that piece 70 ends up as a black piece and piece 66 ends up as a white piece. The new black piece 70 then provides a bridge between pieces 72 and 74 and provides the missing link for joining all four sides of the playing field in a contiguous chain, as shown by line. As is shown, line joins all four sides together in a contiguous chain 50 of black playing pieces, thereby fragmenting the white pieces into separate areas on the playing field, effectively “crumbling” the defenses of the white player.

[0126] FIG. 22 is similar to FIG. 18, but shows the playing field after a different first move has been made by the black player. In this example, the black player splits piece 76 into two L rectangular pieces 78, 80 and then swapped the black piece (previously 80) with the adjacent white piece 82 (shown as black after the swap).

[0127] FIG. 23 shows a similar playing field after many splits and swaps, but at an intermediate playing position where neither player is about to win. FIG. 24 shows the playing field of FIG. 23 at a later point in time, with the white player in a position where one move can win the game and FIG. 25 shows the playing field after the white player has moved to win.

[0128] As is shown in FIG. 25, line 50 joins all four sides of the playing field. Lines 84 and 86 in FIG. 24 show the disconnect prior to the move to get to the winning position in FIG. 25. In order for the white player to move to the winning position in FIG. 25, blank playing piece 88 must be turned into a white playing piece. In order to change piece 88 from black to white, the white player first performs a “join” and then several swaps. First, the white player joins pieces 90 and 92 to make a single piece 94. Because piece 94 shares a common border with adjacent piece 96, pieces 94 and 96 can be swapped. Piece 96 is swapped with piece 98 for the same reason. Finally, piece 98 shares a common border with piece 88, allowing pieces 98 and 88 to be swapped. This changes piece 88 from black to white and allows the user to create a constant line 50 of connected pieces joining all four sides of the playing field.

[0129] As with chess, the present game has a notation system for identifying moves. To make a move, you identify first the piece you wish to start with, and then the additional pieces you plan to act upon. Example notations are shown below:

3.1V2;1W;NWN
3.1H
3.2HN;W
4.5J3,2

[0130] The notation system is a standard formula for identifying any piece and move on the playing field. Each notation begins with the location of the piece you intend to initially operate on with either a split or a join. The numbers reflect the location of the piece within the playing field, a V (for vertical) or an H (for horizontal) represents how a piece is to be split, and a J (for join) represents that a piece is joined. The N, S, W, E directional letters either represent which way the piece is to be moved directionally, or they are used to identify which part of a split piece is to be moved. With the latter, a dash separates the piece identification nomenclature from the move nomenclature, where necessary.

[0131] An example notation for the location of the first piece is 3,1. In order to identify the location of a piece, a player counts intersections 100, and the numbers in the notation reflect the number of intersections to reach the bottom, left corner of the piece. An example showing location 0, represented by the large dot, is presented in FIG. 26. An example of location 3, represented by the large dot, is pre-
presented in FIG. 27. An example of location 0.3 102 is presented in FIG. 28. An example of location 2.2 104 is presented in FIG. 29.

[0132] After pieces have been split, the notation may require additional numbers in order to reach the bottom, left corner of the piece that is being operated on. For example, location 3.1, 106, shown in FIG. 30, involves counting to the East by three intersections 100 from the bottom, left corner of the playing field, moving North by one intersection 100, and moving East by one intersection 100. Location is always identified by a series of East, North, East, North, etc. moves. For example location 3.3, 1.1 108, shown in FIG. 31, the user first counts three intersections 100 to the East, three intersections 100 North, one intersection 100 East, and one intersection 100 North in order to reach the bottom, left corner of the target piece.

[0133] Joining is noted by using the letter J. First the bottom, left corner of the starting piece is identified. This point establishes a new point zero (0). Using the new zero (0) point, the player then counts intersections upwardly to the upper, right corner of the target joining pieces to establish the boundary for the pieces to be joined. An example here is shown in progression in FIGS. 3.2a and 3.2b. The first game board in FIG. 3.2a shows the pieces before being joined and the second game board in FIG. 3.2b shows the pieces after being joined. The notation for this move is 4,3,3,4. First, the bottom left corner is identified by moving 4 intersections East and 3 intersections North. Then this is set as the zero point and the player counts 5 intersections 110 East and 4 intersections 112 North to establish the upper, right boundary of the pieces to be joined together. The joined pieces 114 are then shown in FIG. 3.2b.

[0134] Once pieces have been joined, it is then possible to swap. In order to add a swap to the notation, the direction of swap for the joined piece is then added to the end of the notation. An example is shown in FIGS. 33a and 33b. FIG. 33a shows the pieces before being joined and FIG. 33b shows the pieces after they have been joined and swapped with a piece to the West. The full notation for this move is 2,1,1,2,W. The two smaller rectangles begin at location 2,1 114, which establishes a zero point. The end location for the join is one intersection 110 East and 2 intersections 112 North of the zero point, or 1.2 from the original 2,1 point. The two smaller rectangles make a 2 L white rectangle 116. This 2 L white rectangle is then swapped with the black square to the West so that the black square to the West becomes white 120 and the 2 L rectangle to the East 118 becomes black 122.

[0135] FIGS. 34a and 34b depict an example of splitting one piece along a vertical split-line. FIG. 34a shows the playing field before the piece is split and FIG. 34b shows the playing field after a piece has been split and swapped. The notation for this move is 3,2,VE. The pieces that is to be split is located at 3,2, noted by the large dot. The “V” identifies that the piece is to be split vertically. The “E” identifies that one of the remaining pieces is swapped to the East. Since only the split piece that is to the East can be swapped with a piece to the West, it is not necessary to note which piece is being swapped, since the choice is inherent given the swap to the West. There are other times where it is necessary to identify which of the remaining pieces is to be swapped and later examples describe this scenario.

[0136] FIGS. 35a and 35b depict an example of splitting one piece along a horizontal split-line 28. FIG. 35a shows the playing field before the piece is split and FIG. 35b shows the playing field after the piece has been split and swapped. The notation for this move is 2,2,HS. The pieces that are to be split are located at 2,2, as noted by the large dot. The “H” identifies that the piece is to be split horizontally along split line 28. The “S” identifies that the lower remaining piece is swapped to the South. As with the prior example, since only the lower piece can be swapped to the South, it is not necessary to note which of the two pieces are being swapped. The choice is inherent given the swap to the South.

[0137] FIGS. 36a and 36b depict an example of splitting a single piece horizontally and swapping it in the direction of the split-line. FIG. 36a shows the playing field before the piece is split and FIG. 36b shows the playing field after the piece has been split and swapped. The notation for this move is 3,2,HN-W. This notation includes a dash (“-“), which is different from prior notations. The dash in this case is used to separate the identification of the piece being swapped from the direction of swap. The piece that is being split is located at 3,2, noted by the large dot. The “H” identifies that the piece is being split horizontally. The intended swap is to the West. However, both the upper and lower remaining pieces have the opportunity to be swapped to the West.

[0138] Therefore, it is necessary to identify which of the two pieces is to be swapped. This is accomplished by noting the direction of the piece that is being swapped. In this case, the northern piece 124 is the one that is being swapped West, so the notation includes an “N” to identify which of the two pieces are being swapped and a dash separates the notation for the identification of the piece from the swap movement, which is “W” for West. If the lower piece 126 of the two had been chosen for swapping (which in this case was not possible since you may not swap a black piece with another black piece), the notation would have been an “S” before the dash. Thus, the dash is used to separate the move itself from the notation that identifies which piece is being moved. But when it is not necessary to identify the pieces that is being moved, the dash is not necessary and the direction identifiers are used to identify the direction for swap, as with prior examples.

[0139] FIGS. 37a and 37b depict an example where multiple pieces are split along a split-line 28. FIG. 37a shows the playing field before the split and FIG. 37b shows the playing field after the split. In this example, all the pieces being split are positioned adjacent one another. Therefore, three larger squared 128 turn into six 2 L rectangles 130. The notation for this move is 1,1,H3. The starting point for the split is position 1,1, noted by the large dot in FIG. 37a. The split occurs horizontally, as denoted by the “H,” and the split occurs for three pieces 128 to the right or East. With horizontal splits, the number of pieces to be split always occurs to the right or East of the initial location.

[0140] FIGS. 38a and 38b depict an example where multiple pieces are split along a split-line 28 in order to split two different pieces 132, 134, but where the split line also travels along an existing border line 136 where pieces are not split. FIG. 38a shows the playing field before the split and FIG. 38b shows the playing field after the pieces have been split. The notation for this move is 3,1,IV. The starting location is at 3,1, noted by the large dot in FIG. 38a). The “V” identifies that the pieces are split vertically and the “2” denotes that two pieces are split. Because this is a vertical split, the number of pieces to be split always occurs to the North of the initial location. Here, since the split line runs along an existing border line 136, the split pieces are spaced apart from one another.
FIG. 39 depicts an example of splitting multiple pieces and swapping one of the split pieces. FIG. 38a represents the playing field before the pieces have been split and FIG. 39 represents the playing field after the pieces have been split and swapped. Because multiple pieces were generated by the split, it is necessary to identify which of the pieces are to be swapped. Dashes are used to separate the notations in order to identify which pieces are split and which pieces are swapped. The notation for this move is 3.1V2-1E-ENE. The starting position is 3.1. The “V” identifies that a split is to occur vertically, and the “2” identifies that two pieces are split. This leaves two upper split pieces 138 and two lower split pieces 140. A “1” is used to identify the lower split pieces 14 and a “2” would be used to identify the upper split pieces 138. In order to separate this notation from the notation for the split, a dash is used. Because there are two lower pieces 140, represented by the “1,” the user uses an “E” to identify that the Eastern piece 142 of the lower two is being swapped. This identification is separated from the swap moves by a dash. Then the swap moves are identified in the previously described fashion. In this case, the 1E piece is first swapped East, then North, then East.

FIG. 40 depicts another example of splitting multiple pieces and swapping one of the split pieces. FIG. 38a represents the playing field before the pieces have been split and FIG. 40 represents the playing field after the pieces have been split and swapped. Because multiple pieces were generated by the split, it is necessary to identify which of the pieces are to be swapped. Again, dashes are used to separate the notations in order to identify which pieces are split and which pieces are swapped. The notation for this move is 3.1V2-1W-NWN. The starting position is at 3.1. The “V” identifies that a split is to occur vertically, and the “2” identifies that two pieces are split. This leaves two upper split pieces 138 and two lower split pieces 140. In order to properly identify which piece is being swapped, a dash is positioned between the split notation and the notation that identifies the piece to be swapped. In this case, the lower, West piece is being swapped, as represented by a “1W.” Then a dash separates the identification of the piece 144 being swapped and the directions for swap. The selected piece is then swapped first North, then West, and then North.

FIG. 41 depicts another example of splitting multiple pieces and swapping one of the split pieces. FIG. 38a represents the playing field before the pieces have been split and FIG. 41 represents the playing field after the pieces have been split and swapped. Because multiple pieces are generated by the split, it is again necessary to identify which piece is to be swapped. As with before, dashes are used to separate the split notation from the piece identifying notation from the movement notation. The notation for this move is 3.1V2-2E-ESE. The starting position is 3.1. The “V” identifies that a split is to occur vertically, and the “2” identifies that two pieces are split. This leaves two upper split pieces 138 and two lower split pieces 140. In order to properly identify which piece is being swapped, a dash is positioned between the split notation and the notation that identifies the piece to be swapped. In this case, the upper (denoted by a 2), East piece 146 is selected for swapping, as represented by a “2E.” Then a dash separates the identification of the piece being swapped and the directions for swap. The selected piece is then swapped first East, then South, and then East.

FIG. 42 depicts yet another example of splitting multiple pieces and swapping one of the split pieces. FIG. 38a represents the playing field before the pieces have been split and FIG. 42 represents the playing field after the pieces have been split and swapped. Because multiple pieces are generated by the split, it is necessary to identify which piece is to be swapped. Since there were two pieces that were split, this leaves a lower block of split pieces 140, represented by a 1, and an upper block of split pieces 138, represented by a 2. As with before, dashes are used to separate the split notation from the piece identifying notation from the movement notation. The notation for this move is 3.1V2-2W-WSSW. The starting position is 3.1. The “V” identifies that a split is to occur vertically and the “2” identifies that two pieces are split. This leaves two upper split pieces 138 (represented by number 2) and two lower split pieces 140 (represented by number 1). In this case, the upper, West 148 split piece is selected for swapping. Then a dash separates the identification of the piece being swapped and the directions for swap. The selected piece, in this example, is swapped West, South, South, and East.

While the above examples are discussed in the context of using squares and 2L rectangles, other embodiments of the invention may incorporate other shapes. The substitution of different shapes involves only minimally adjusting the rules of the game in order to allow different pieces. The effect of these substitutions on game play, however, can be profound. Some other shapes that are contemplated include Golden rectangles 150, Silver rectangles 160, and A4 rectangles 170. Golden rectangles 150 are shown in FIG. 43, Silver rectangles 160 are shown in FIG. 44, and A4 rectangles 170 are shown in FIG. 45. The use of silver, golden, or A4 rectangles increases the number of available moves and subverts the deeper structure of play.

Golden rectangles 150 are rectangles whose side lengths are in the golden ratio, \(1: \phi\) (one-to-phi), that is \(1:(\sqrt{5}-1)/2 \approx 1:1.618\).

A special feature of the golden rectangle is that when a square section 152 is removed, the remainder is another golden rectangle 150 with the same proportions as the first. This square removal can be repeated indefinitely. Thus, an example game is contemplated utilizing a plurality of squares that may be broken into legal pieces that include either a golden rectangle 150 or a square 152. When pieces are split, they may be split into a square 152 and a smaller golden rectangle 150.

Silver rectangles 160 are rectangles that have side lengths that represent the silver ratio of \(1:(\sqrt{2}-1)/2 \approx 1.4142\).

A special feature of the silver rectangle 160 is that removing the largest possible square from a silver rectangle 160 yields another silver rectangle. An example game is contemplated utilizing a plurality of squares and silver rectangles.

A4 rectangles 170 have a unique property wherein they possess a ratio of 1:2. The A4 rectangle 170 can be split widthwise to produce two rectangles 170 whose sides have the same ratio as the original piece, as shown in FIG. 45. Thus, instead of having a square and a 2L rectangle (having a ratio of 1:2), the use of A4 rectangles 170 would produce pieces with a ratio of \((\pi/2):\pi\).

These pieces are referred to has half A4 pieces 172. There is a strategic significance to using the A4 170 and half A4 172 pieces instead of the square and the 1/2-rectangular pieces. In the game described above in connection with FIGS. 1-42, the
rectangle (1:2 ratio) only has one way that it may be split, which is widthwise, producing two squares. Squares have two ways they can split, either lengthwise or widthwise, which produces two rectangles in either case. With A4 170 and half A4 pieces 172 playing pieces, the half A4 pieces 172 also have only one way to be split, which is widthwise, producing two A4 pieces 170. But the A4 pieces 170 can be split lengthwise to produce two half A4 pieces 172, or widthwise to produce two more A4 rectangles 170. Instead of the case of the square being able to produce only rectangles in turn have only a single option of how they can be split, the A4 pieces 170 can split into two more A4 pieces 170 that in turn have two options of how they can be split. In the parlance of game theory, this means that the game described in FIGS. 1-42 has a “less bushy game tree” than the game that may be played with A4 170 and half A4 pieces 172.

[0149] Similarly, other pieces may be constructed, either quadrilateral, or any polygon or curved shape that may be split and joined in a way to produce a game tree such as that described above.

[0150] The above examples were defined in terms of a two person game. However, one of skill in the art will recognize that this game may also be played by more than two players. Where there are more than two players, an additional color of pieces shall be added, such as a third color. The game pieces will preferably be arranged in an organized pattern to accommodate the additional person or persons. Other variations will be readily apparent to one of skill in the art based upon the teachings herein.

[0151] The term “substantially,” if used herein, is a term of estimation.

[0152] While various features of the claimed embodiments are presented above, it should be understood that the features may be used singly or in any combination thereof. Therefore, the claimed embodiments are not to be limited to only the specific embodiments depicted herein.

[0153] Further, it should be understood that variations and modifications may occur to those skilled in the art to which the claimed embodiments pertain. The embodiments described herein are exemplary. The disclosure may enable those skilled in the art to make and use embodiments having alternative elements that likewise correspond to the elements recited in the claims. The intended scope may thus include other embodiments that do not differ or that insubstantially differ from the literal language of the claims. The scope of the example embodiments is accordingly defined as set forth in the appended claims.

What is claimed is:

1. A game of strategy comprising:
   a plurality of game pieces that are dividable into smaller game pieces, said game pieces initially comprising some in a first color and some in a second color, and arranged in a pattern on a playing surface to define a playing field, with each of the pieces having a legal shape such that the pieces may only be divided into legal shapes.

2. The game of claim 1, wherein half of the pieces are a first color and half of the pieces are a second color.

3. The game of strategy of claim 1, wherein a legal shape for the game pieces is either square or a 2:1 rectangle.

4. The game of strategy of claim 1, wherein a legal shape for the game pieces is either square and golden rectangle or square and silver rectangle.

5. The game of strategy of claim 1, wherein the game pieces are dividable, but only into smaller, legal-shaped game pieces.

6. The game of strategy of claim 1, wherein the game pieces may be joined to form a single legal-shaped game piece from a plurality of game pieces.

7. The game of strategy of claim 1, wherein the game pieces of the first color may be swapped with game pieces of the second color and vice versa.

8. The game of strategy of claim 1, wherein in order to swap pieces, said pieces must share a common width or length.

9. The game of strategy of claim 1, wherein in order to divide the game pieces, a split line is defined and any like-colored game pieces along said split line are dividable.

10. The game of strategy of claim 1, wherein the game pieces of the first color may be captured by the game pieces of the second color and vice versa.

11. The game of strategy of claim 1, wherein in a starting position, half of the pieces are a first color and half of the pieces are a second color, the game pieces are dividable into smaller game pieces, multiple game pieces may be joined to form a single game piece from a plurality of game pieces, the game pieces of the first color may be swapped with game pieces of the second color and vice versa, and the game pieces of the first color may be captured by the game pieces of the second color and vice versa.

12. A game of strategy comprising:
   a plurality of playing pieces, each playing piece being dividable into two playing pieces being arranged in a pattern on a playing surface, wherein the playing pieces may be one or more of divided, joined, swapped, and captured during play, wherein the playing pieces comprise a first set of pieces having a first color and a second set of pieces having a second color.

13. The game of claim 12, wherein, during play, one or more playing pieces may be captured such that said one or more playing pieces change from either the first color to the second color or from the second color to the first color.

14. A process for playing a game of strategy having a plurality of playing pieces that are dividable, joinable, swapable, and capturable, said playing pieces being arranged in a pattern on a playing surface, said playing pieces including a first set of pieces having a first color and a second set of pieces having a second color, said process comprising:
   a first move that includes splitting one playing piece of the first color into two smaller playing pieces of the same color and optionally swapping one of the split playing pieces of the first color with one of the playing pieces of the second color;
   a second move that includes either splitting one or more playing pieces of the second color into two or more smaller pieces of the second color or joining two or more playing pieces of the second color into a single larger playing piece of the second color and optionally swapping one of the split or joined playing pieces of the second color with one of the playing pieces of the first color;
   a further move of one or more playing pieces of the first color that includes one or more of splitting, joining, or swapping; and
   a further move of one or more playing pieces of the second color that includes one or more of splitting, joining, or swapping.
15. The process of claim 14, wherein initially half of the playing pieces are the first color and half of the playing pieces are the second color.

16. The process of claim 14, further comprising assessing whether one or more playing pieces have been captured during each move, with capturing involving surrounding one or more playing pieces of the other color.

17. A winning position for a game of strategy having a plurality of game pieces arranged on a playing surface, the pieces being arranged in a pattern defining a playing field that has a West side; an East side, a North side; and a South side, with the game pieces being split into a first set having a first color and a second set having a second color, said winning position comprising:

a contiguous chain of game pieces of a single color that extends between at least two of the West Side to the East side to the North Side to the South side.

18. The winning position of claim 17, wherein the winning position requires a contiguous chain of game pieces that extends between all four sides from the West side to the East side to the North side to the South Side of the playing field.

19. The winning position of claim 17, wherein the game pieces abut each other along at least part of the length or width of one of their sides to form the chain.

* * * * *