

### **Attacking enemy pieces pinning own pieces**

Pieces attacking enemy pieces that pin own ones are due some bigger bonus than the standard one for attacking pieces (by 1/4 bigger), even if the pinning piece is well defended and the attacking piece is of bigger power in relation to the pinner, as this might have some important tactical implications.

### **Bishop the colour of a weak spot in the enemy king position with the enemy side having no bishop of the same colour**

In that case the bishop without an enemy counterpart would score +20cps for any weak spot of the same colour, as attacking chances would greatly increase with queens on the board.

### **Flexible pawn structures**

A flexible pawn structure would be any group of 3 ps with the following characteristics:

- being important in some way
- most of the moves of the ps of that group would result in another group of ps sharing the same characteristics

Most notable flexible pawn structures would be the following:

- group consisting of 3 horizontally adjacent ps (eg. wpsd4,e4,f4); those ps control a range of continuous squares, and besides they could easily transpose into a group with an apex p
- group with an apex p (eg. wpsd3,e4,f3); this structure is important because of the apex p, and besides it could easily transpose into a group of ps with a lead p horizontally adjacent to another own p
- group of ps with a lead p horizontally adjacent to another own p; this group could easily transpose into three horizontally adjacent ps or a larger diagonal connection

Flexible pawn structures might score the following bonus points:

- +2cps for a group consisting of 3 horizontally adjacent ps
- +5cps for a group with a lead p horizontally adjacent to another own p
- +10cps for a group with an apex p

Other groups of 3 ps would not share the same characteristics of flexibility. A diagonal connection of 3 ps, for example, would crumble with any move of a pawn of the group and no other flexible structure would replace it; a group of 3 ps with one root pawn connecting to 2 more advanced ps (eg. wpsd3,e4,c4) with the best of moves could only transpose to a group of 3 horizontally adjacent ps, the least valuable of the flexible structures.

Flexibility bonus points would receive also larger groups of ps with 3 of them exhibiting the above characteristics. Structures with a least advanced p on the 2nd rank would not be considered.

### **Mobility takes precedence over attacks**

In the case a certain piece has very good attacking potential, but very low mobility (no free or just one free squares), it would be wise not to consider such moves at all, as usually deeper into the game attacking potential could whittle away, but mobility will remain low. That could be a losing variation, even if the piece attacks important squares of the enemy king shelter. Sometimes engines commit such mistakes.

### **Temporary backward pawn**

A temporary backward pawn would be one that can not advance at the moment, but whose advance could be supported in the future by another p. Eg. wpb3, bpsc5,b7 - c5 is such a pawn, but bpb5 is possible at a later stage  
-5cps for such a p

### **Control of squares into the enemy camp on the 5th rank on the side where the enemy king has castled**

Controlling squares into the enemy camp on the 5th rank on the side where the enemy king has castled (or taken refuge) will be due double the bonus points for the usual case of controlling squares into the enemy camp, because this could have some vital importance in terms of reinforcements for king attack.

### **The hub pawn**

The hub pawn would be a pawn that is a lead pawn of one diagonal connection and a root pawn of another one. Eg. wpsb3,c4,b5 - c4 would be such a p That is, hub pawns concern doubling. Such double ps are preferable to other types of double ps, of course, because they are better defended. The hub pawn is the center point of the entire group and it is very sturdy. Therefore, it deserves some bonus.  
+4cps for such a pawn

### **An apex hub pawn**

An apex hub pawn would be a pawn that is a lead pawn of one diagonal connection and a medium p of another diagonal connection. Eg. wps c3,d4,e5,e3 - d4 would be such a p. Such a hub pawn would be extremely sturdy, because it is defended by 2 own ps, and is practically an apex p, if we consider the smaller c3,d4,e3 structure. As it is very important for the integrity of the larger structure, and considering its strength, 1/3 higher bonus than that for a standard hub pawn might be indicated.  
+6cps for such a p

### **A medium hub pawn**

A medium hub pawn would be a p that is a medium p of one diagonal connection and a root p of another diagonal connection. Eg. wps c3,d4,c5,e5 - d4 would be such a p. Of course, such a hub pawn would be very important for the integrity of the entire structure, but the peculiarity here is that this pawn supports 2 lead ps, so its role is only additionally highlighted.  
+8cps for such a p  
Again, the doubling with such structures of diagonally connected ps is less harshly felt.

### **Considerable space disadvantage**

Well, some call such positions cramped. When one of the sides has more than 2 pieces with mobility lower than 2 available squares, each piece should get an additional penalty of -20cps, as sometimes just the low mobility scores will not be able to paint the real picture on the board. In such cases even larger fixed structures will have difficulties with seeking out drawish variations.

### **Bishop on the same diagonal with an enemy bishop with own ps in between along that diagonal**

When a bishop is on the same diagonal with an enemy bishop with own pawns but no enemy pawns in between that diagonal, it will be due some penalty points because of tactical considerations.

-11cps in the case of a single own p along that diagonal

-5cps in the case of 2 own ps

### **Vertical span of a group of pawns**

The vertical span of a single group of pawns, especially if it is bigger, will matter in terms of creating attacking possibilities on the enemy king.

+5cps for each rank the group spans

### **Unopposed pawn when defended by another own pawn fixed by an enemy pawn**

Eg. wpsb2,d4, bpsd5,c4,b4 - c4 would be such a p for black, supported by d5. In some cases c4 could also qualify for a potential passer.

1/3 higher value for an unopposed p (potential passer), as this pawn will last a longer time on its position

### **King attacking enemy objects**

King attacking enemy objects (obviously in the endgame) will be due some lower bonus than the standard one for attacking objects, as even in the endgame such an attacking king is exposed to some risks.

1/5 lower value for attacking

### **More than one pawns and pieces on the same diagonal with enemy bishop the colour of the diagonal the own pawns and pieces are on**

Such an arrangement would be due some tiny penalty because of possible tactical implications

-2mps in case of 2 own ps or pieces on the same diagonal

-5mps in case of more than 2 own ps or pieces on the same diagonal

### **Closeness of an apex pawn to the enemy king**

This could be considered alternatively to considering closeness for lead pawns.

Double values for an apex p close to the enemy king (just 1,2 or 3 squares in between), in case such a pawn is leading more than 2 pawns on both diagonals. Such a pawn is undoubtedly a tremendous force.

+30cps with just one square in between

+20cps with 2 squares in between

+10cps with 3 squares in between

### **Attacking pieces with restricted mobility**

Pieces attacking enemy pieces with restricted mobility (no free or just one free available square) will be due 1/2 higher bonus than the standard one, because this might have some very important tactical implications. Own pieces with restricted mobility, attacked at that, are to be avoided at any cost.

When considering this, only attacks on pieces with different power will be taken into account, i.e., knights attacking enemy bishops or rooks attacking enemy knights, etc.

### **Semi-backward p with the pawn making it semi-backward being unopposed**

Eg. wpb5, bpsd7,c7 - c7 is such a pawn. 1/3 higher penalty for such a pawn would be indicated, as in the case the semi-backward p advances, the enemy pawn making it backward will have also the option of moving further forward, in distinction to the usual case (eg. wpb5, bpsd7,c7,b6 - here c7 gets the standard penalty, as b6 fixes wpb5).

This type of pawn will be considered only for the 7th and 6th ranks, for when the p advances further, usually pieces for the side with the semi-backward p will have predominant control of the square in front of the p, making it not a weakness.

7th rank might get the standard value, and the 6th rank a bit lower penalty.

### **Semi-backward pawn diagonally connecting to a less advanced own pawn**

Eg. wpb4, bpsd6,c6,b7 This type of semi-backward p (c6) will deserve 2/3 lower penalty than the standard one, as at some point of time its advance could be supported by the less advanced own p (by playing c7-c6 in this case).

Such a pawn could be considered only for the 6th rank, as when the pawn moves forward, usually own pieces will have sufficient control of the square in front of it, making it not a weakness.

### **Bishops in terms of enemy pawns on squares the colour of the bishop**

Bishops will get a bonus of 2cps for each enemy pawn on a square the colour of the bishop. In case such ps are fixed, the bonus will be double, and will rise to treble when the fixed enemy ps are placed on central e or d files. This will be meaningful for bishop versus bishop or bishop versus knight configurations.

Of course, the other way round, considering penalties for bishops in terms of own ps on squares the colour of the bishop, will be even more important, as, in distinction to the previous case, this will concern not only the attacking potential of the piece, but also its mobility.

Penalties might be dispensed just as above, but with a minus sign and multiplied by 2 or 3.

I think the blend of both ways to assess a bishop's relevance on the board might be the optimal fashion of proceeding, as this will minimize the risk of omitting important information.

I think this is very important to do for bishops, otherwise the evaluation will not be quite correct. I have seen unbelievable instances of top engines being blind and losing games on such counts even in fairly simple endings.

### **Hub pawns in terms of ranks**

Obviously, hub pawns could be considered from the 3rd through the 5th rank (a hub pawn on the 6th rank would have a protected passer as its lead pawn, which is pretty much meaningless).

1/5 higher value for a hub pawn on the 4th rank in relation to a hub pawn on the 3rd rank, and in turn 1/5 higher value for a hub pawn on the 5th rank in relation to a hub pawn on the 4th rank.

### **Complications**

#### **Tactical prowess in terms of capturing ability**

This might be very important tactically.

For each piece and pawn on the board possible captures will be considered under the supposition that the piece or pawn starts capturing enemy objects and continues capturing all the way as if it has a continuous right of move until it has captured all enemy objects. If there are capturing ramifications along the way, they will be considered separately until all are exhausted. Then we will proceed to counting the length of capturing variations and assigning bonus points. Capturing the enemy king will not be considered, of course.

The 3 lengthiest capturing variations will get bonus points.

The lengthiest one will get +7mps for each capturing move

The second lengthiest will get +5mps for each capturing move

and the third lengthiest will get +3mps (but, of course, larger values could also be tested)

The procedure will be repeated for each piece and pawn on the board with possible capturing moves. In the end we will have a decent picture of the capturing prowess of each piece and pawn. This, in turn, might be useful in complicated positions. When there are a lot of possible captures and lengthy ways, the values for this technique might be increased accordingly.

### **Mobility in terms of own and enemy pawns and pieces influencing the availability of free squares**

This might be interesting to check. As it is actually very difficult to forestall in detail mobile squares availability with a timeframe, an attempt at introducing further mobility criteria could not be damaging overall.

Each square occupied by an own piece on which a piece could be mobile if it were not for the own piece will get +10mps

Each square occupied by an own pawn on which a piece could be mobile if it were not for the own pawn will get +5mps (as pawns are slower in moving)

Each square controlled by an enemy piece on which a piece could be mobile if it were not for the enemy piece controlling it will get +20mps

Each square controlled by an enemy pawn on which a piece could be mobile if it were not for the enemy pawn controlling it, will get +15mps

The sum total will represent the mobility of the piece in terms of this indicator.

This will be repeated for all pieces.

Checking mobility in this way might be a second option complementing the standard way of calculating mobility. It will be interesting to compare results with both options. Maybe this will provide some indication of an optimal way of calculating mobility.

### **Semi-backward pawn when part of the king shelter**

When a semi-backward p is part of the king shelter, it will be due some higher penalty, by 1/3, because of its tricky position. Moving the p will be subject to conditions.

### **One pawn making 2 enemy ps semi-backward**

When one and the same pawn makes 2 enemy ps semi-backward, the semi-backwards will score half their usual penalties each, as in this case they are much less of a weakness.

### **Root pawns when fixed**

When root pawns are fixed by enemy pawns, they will score bigger penalties, by 1/3, as the weakness becomes enduring. Bigger penalties will score also root pawns that are backward or backward-fated, because of partially restricted mobility. 1/4 bigger penalty in this case might be a decent assessment.

### **Attacking more than one enemy pieces of different capacity on an x-ray**

Pieces attacking more than one enemy pieces of different capacity on an x-ray will deserve some bonus because of tactical considerations.

+4cps for any enemy piece after the first

Different capacity will mean rooks attacking knights and bishops, or bishops attacking knights and rooks, queen attacking bishops and knights on a line and queen attacking rooks and knights on a diagonal.

### **Additional bonus points for apex pawns in terms of the number of ps they are leading**

Apex ps will get some bonus relative to the number of pawns they are leading along both diagonals.

+2cps for each p that is led along one of the diagonals

### **2 bishops next to each other**

2 bishops next to each other horizontally or vertically will get some bonus points because of continuous control of squares. In this way the bishops will control 4 continuous squares on an adjacent rank, when they are horizontally adjacent to each other, and 4 continuous squares on an adjacent file, when they are vertically adjacent to each other.

+12cps for such an arrangement

This might be especially useful with king attacks.

### **Congestion of pieces in terms of forming compact groups**

When pieces are adjacent to each other horizontally, vertically or diagonally, as if forming a single group of pawns, they would be due some penalty points, as this is a bad indication overall for the health of the position.

-2mps for each piece member of a group defined as a group of pawns

But, of course, higher penalties could also be tested.

Kings will not be considered for this.

### **Potential for winning tempo**

Winning tempo is an important tactical indicator.

The number of moves with attacks on pieces of bigger power will be considered. Meaning, bishops and knights attacking rooks and queen, rooks attacking an enemy queen. The moves will be counted even when an attack would produce a loss in material. We check all such moves for the sides.

Each move of this quality gets +3mps.

Pawns will also be included.

Possible pawn attacking moves on any of the enemy pieces, regardless of whether the pawn is lost or not, will get +2mps, a bit lower value than that for pieces, because usually pawns are less relevant tactically.

### **Space advantage for pawns in terms of the file they are on**

This will be considered only for pawns gaining space advantage that are fixed. It might make sense to assign different bonus points for such pawns in terms of files apart from the usual bonus points assigned to pawns in the general case, when they are not gaining space, not

fixed, etc., because such pawns will constitute a lasting positional feature and calibration could only help have a better positional assessment with a timeframe.

Under the supposition we do not know where the kings have castled, the following bonus points might be dispensed:

a and h pawns could get the standard value

b and g ps will get +3cps over that when on the 5th rank, and +7cps over that when on the 6th rank

c and f ps will get +5cps over the standard value when on the 5th rank and +10cps over the standard value when on the 6th rank

d and e ps will get +8cps over the standard when on the 5th rank, and +15cps over the standard when on the 6th rank.

### **Pawns storming the enemy side where the enemy king has not castled**

Pawns storming the other side than the side where the enemy king has castled (usually this would be the queen side) would be due some bonus points. I really think it does not matter if the storming pawns on that side are in a minority or in a majority, the important thing would be to attack, try to gain space advantage and open files. Minority pawns are usually just quicker in moving.

+10cps for a pawn on the 4th rank

+15cps for a pawn on the 5th rank

and +20cps for a pawn on the 6th rank, clashing with an enemy pawn on the 7th, if, of course, such a move is tactically relevant.

### **Tandems and triplets with x-ray attacks**

Tandems and triplets (queen and bishop on the same diagonal, queen and rook on a file or rank, and queen and 2 rooks on a file or rank) might have some added value when considering x-ray attacks upon enemy pieces on the same line. Tandems and triplets, of course, provide strength.

+6cps for a queen and bishop attacking an enemy piece along an x-ray

+10cps for queen and rook attacking an enemy piece along an x-ray

and +15cps for queen and 2 rooks attacking an enemy piece along an x-ray

### **King finding shelter behind a hub pawn**

A king finding shelter behind a hub pawn, even in the center of the board, will be due some additional bonus points to the usual points assigned to shelters, as hub pawns are very sturdy. But this will be considered only when the king is immediately behind the hub pawn or just one square away, and with hub pawns members of a group of ps of at least 4 ps in all.

+5cps for such a king

### **Rook outposts**

Rook outposts will be squares on the 5th or 6th ranks, with no enemy pawns being able to attack them, and no enemy minor pieces within the next 3 moves.

+3cps additionally to other bonus points for a rook on such a square on the 5th rank

+5cps, if the rook occupies a square on the 6th rank

Although rooks are usually mobile pieces, having a quiet place for rest in the enemy camp is certainly an advantage

### **Bishop on a diagonal adjacent to a diagonal occupied by an own group of ps led by a lead p**

This will be considered only if the group of ps is larger than 2 ps.

Eg. bbc8, bpsc7,d6,e5 Such a bishop would be due some bonus because of control of complementary squares in a specific area of the board (in this case the c8-h3 and b8-h2 diagonals).

+5mps for the bishop for any member of the diagonal connection

### **Mutual piece defence**

Mutual piece defence will be the case when 2 pieces defend each other simultaneously. Queen and bishop defending each other on a diagonal, 2 rooks defending each other on files or ranks, and queen and rook defending each other on files or ranks would qualify.

Mutual piece defence is an optimal way of defending, as even if one of the pieces is forced to move, it can still do so on another square of the current diagonal, maintaining the mutual piece defence. This would not be true of other types of defence. So some bonus points would be due for flexibility.

The following bonus points could be dispensed (additionally to other bonus points for defending pieces):

mutual piece defence of queen and bishop +2cps

mutual piece defence of 2 rooks +3cps

mutual piece defence of queen and rook +5cps

Maybe here is the place to say why 2 knights defending each other would get not bonus points, but penalty points instead. In the first place, 2 knights defending each other are a very rigid configuration, when one of the knights is forced to move, the mutual defence will crumble instantly. Secondly, and most importantly, 2 knights defending each other limit each other's mobility in a painful way, as knights are usually not very mobile and each free square is valuable. Therefore, penalties assigned to such knights are justified, and might even be big enough.

### **Mutual piece-pawn defence**

Mutual piece-pawn defence will be the case when a piece defends a pawn and vice-versa.

Only bishop and pawn mutually defending each other will be considered. (eg. wpb2, wbc3)

The specificity here is that, apart from the piece and bishop defending each other, for which they will get some bonus for general defence, in the case of the bishop being captured, the own pawn will advance one square, which is a good sign.

+1cp additionally for this arrangement

Mutual defence of queen and pawn is also valid on the same counts, but +1mp would hardly be essential in deciding the game.

### **Penalties for rooks on open and semi-open files in terms of existence of other own pieces in front of the rooks on those files**

When there are other own pieces (bishops and knights) in front of a rook on an open or semi-open file, some penalties will be assigned to the rook, as, obviously, those pieces stand in the way of the rook.

-5cps for each own piece in front of the rook on an open file

-3cps for each own piece in front of the rook on a semi-open file

When the rooks are double on open and semi-open files, the penalties for each own piece in front of the rooks might be increased accordingly, as such pieces will stand in the way of a bigger potential. With double rooks, the existence of own pieces in between the rooks will be considered in the same way.

The same penalties will be applied to queen and rook on an open and semi-open file, and 3 heavy pieces on open and semi-open files, but increased a bit in conformance to the potential of the heavy pieces.

### **Double fianchetto**

Developing both bishops on the long diagonals would hardly compensate for the loss of control of center. Therefore, this is not a good opening strategy.

-20cps for such an arrangement

### **Bishop on the second rank and b or g files defending an own end file pawn on the 3rd rank**

A bishop on the 2nd rank and b or g files defending an own end file pawn on the 3rd rank (a or h pawn; eg. wbb2,wpa3, or wbg2,wph3) would be due a tiny bonus, as it is more difficult to attack the bishop there, and this will also make the pawn safer.

+1cp

### **Bishops on both sides of the board**

Placing the bishops on both sides of the board (the queen and king side), instead of just on one of the sides, would give a tiny bonus, as usually in this way the bishops control better one and the other side.

+2cps

### **Mobility of squares from where the enemy king could be checked**

Mobility for such squares should be scored double, as usually this would force a variation or an array of variations on the enemy side, providing additional opportunities for development of own pieces or improving the mobility of the piece that checks the king.

### **Bonus for rooks for more than one enemy minors on the same line**

Rooks are due some bonus in the case more than one enemy minor pieces are placed on one and the same line (file or rank). Obviously, this creates beneficial tactical opportunities.

+2cps for any minor after the first on the same file or rank

The queen could also get bonus for such an arrangement.

+15mps

### **Own pieces standing in the way of a tandem of queen and bishop**

When own pieces (that would be rooks and knights) stand in the way of a tandem of queen and bishop on the same diagonal (meaning being placed in front of both pieces, or in between), that would naturally lower the potential of the tandem for some time. The subtraction of some points from the bonus for the tandem would be indicated.

-4cps in this case

### **Mobility for the queen in terms of accessible squares on lines and diagonals**

Generally, it would be good that the queen keeps to the standard ratio of available mobile squares on lines and diagonals, which is close to 3 to 2 in favour of mobile squares on lines (files and ranks).

Points might be dispensed in the following way:

Perfect ratio of 3 to 2 in favour of mobility on lines - queen gets a bonus of +10cps

Ratio in the interval from 3.5 to 2 to 3 to 1.7 in favour of mobility on lines - queen gets a bonus of +5cps

Ratio above those values in favour of mobility on lines, or prevailing mobility for the queen on diagonals - queen gets a penalty of -7cps

Again, this rule should not be generalized too much, because the queen is a very mobile piece and easily transfers to different locations on the board using for the purpose alternately mobile squares on lines and diagonals, but the specific ratio numbers might still be an indication of the good health of the queen or the own pieces around it. When the ratio is lopsided, there are chances that something is wrong either with the queen itself, or with the own pieces in its immediate surrounding.

### **Bonus points for bishops in terms of more than one enemy pieces on the same diagonal**

Bishops would be due some bonus in the case more than one enemy pieces are placed on the same diagonal the colour of the bishops.

+7mps for each enemy piece after the first on one and the same diagonal the colour of the specific bishop (but enemy bishops would not be considered for this)

This might have its tactical justification.

A queen might get some bonus points, too, when more than one enemy pieces (rooks and knights, but not bishops and queens) are placed on one and the same diagonal, regardless of the colour of the diagonals the queen currently controls.

+3mps for any enemy rook or knight after the first piece on one and the same diagonal

### **Why penalties for weak pawns should be higher in the endgame**

In the endgame, factors like opposition of kings and zugzwang play an important role, and the side with the more weak pawns will usually have to make concessions on both factors because of its weaknesses. This will, in turn, lead to a very probable loss of the game. Therefore, in the endgame penalties for weak pawns should be increased accordingly by a sufficient margin. In very simple pawn endings the penalties for weak ps should be even bigger, as zugzwang and opposition of kings play an even bigger role. Penalties for weak pawns should include, at least, double, isolated and backward pawns.

### **Penalties for undefended pieces**

Pieces that are not defended by any own pieces or pawns (kings will be included into the defence) will be due some well deserved penalty points because of obvious tactical implications.

Penalty points might be dispensed in the following way:

-5cps for any piece that is not defended by either another own piece, or an own pawn

-7cps for any such piece in the case that the number of undefended pieces exceeds two

But, of course, penalties for undefended pieces might be differentiated.

An undefended queen might get -10cps, and undefended rook -5cps, and an undefended minor piece -3cps.

### **Knight defended by 2 own pawns when part of the king shelter**

Eg. bng6, bpsh7,f7 Such a knight is a very good additional cover for the king, and sturdy at that, almost like a pawn.

+2cps for such a knight (this will be dispensed additionally to other due bonus points for the piece being part of the king shelter)

### **Immediate shelter zone with king in the center**

When the king is in the center (at least on the second rank or further ahead, as well as on a file that is not an end a or h file), the immediate shelter zone will consist of 8 squares in all on all four sides of the king. It is pretty much difficult to try defending such a king, and any own pawn, minor piece or even piece of bigger power within the immediate shelter zone will constitute a definite plus.

### **Pawn versus piece shelter**

The pawn and the piece shelter for the king complement each other. The piece shelter generally follows the shape of the pawn shelter, which is, of course, the most important cover. It is really difficult to say which specific squares of the shelter are a more appropriate location for different pieces of the shelter, in the end it all depends on where the pawns are placed and also other particular features of the position. At any rate, pieces are a very important part of the king shelter and should not be just easily dismissed.

### **Differentiating between minor pieces part of the king shelter in terms of appropriate placement squares**

Although all pieces might be considered for getting bonus points when being part of the king shelter, minors naturally constitute the backbone of the piece shelter.

Distinguishing between the bishop and the knight in terms of more appropriate squares for each piece is not simple, but still some patterns could be observed.

The bishop and knight would get equal values for piece shelter when on the rank where the own king is placed (eg. bbf8, bnf8).

The bishop would get 1/3 higher value for piece shelter when on the rank immediately in front of the rank where the king is placed (eg. bbg7, bbh7).

The knight would get 1/3 higher value when being in front of a pawn of the shelter vertically (eg. bnf6, bng6).

### **The philosophy of chess**

Chess is a game of correlation, and not a game of fixed values.

In chess, you will have to compromise on certain factors only to achieve better results with other factors. Compromising on material might see you with an advantageous positional structure, or a mating attack.

Mate ends the game and is the ultimate objective, therefore, you might pay less attention to positional subtleties and attacking different other enemy objects, if you have sufficient enough concentration of own attacking pieces upon the enemy king.

Pawns are really secondary to pieces. You might even utterly disregard them, in case your pieces enjoy prevailing mobility and attacking values. But when other factors are equal, considering weak and powerful pawns might well decide the day.

Passers are extremely important, because they are prospective pieces. Having a spare passer will gradually ensure a comfortable advantage with other evaluation parameters.

Double and isolated pawns are relevant in terms of structural considerations, they are easier to attack.

What concerns backward pawns, they share similarities with passers. As backward pawns have difficulties in advancing, this could mean that because of that other enemy pawns will have an easier way to the promotion squares, so being backward usually means leaving the initiative to the opponent's pawns.

Chess is a game of a single mistake. You might commit many inaccuracies and still be well into the game, but a single bigger positional or tactical mistake might prove irreversible.

Chess is a game of evaluation. If crude elements are not able to give you an advantage, you will have to resort to subtler evaluation elements, with sometimes very small, even tiny, bonus points. Although being small in value, a couple of factors like that will gradually up your score to the point where the game will be in the balance.

But chess is a game of depth too. Evaluation changes with depth. Bigger and extreme depths are the challenge, for engines and humans alike. Still, I believe, that a good evaluation should be able to show you the right way even at very small depths, maybe even at ply 2 or 3.

In chess there is always a 'but'. You might specify to your heart's content, but there will always be specific cases in which well-thought rules would not apply. The number of variations is simply overwhelming for any rule to encompass them all.

### **On time management**

This could be a bit off topic, but still has an indirect bearing on game play and evaluation.

When I play games against (top) engines, I quite frequently observe that very few engines indeed seem to have an optimal time management. Most engines as if allocate a proportionate amount of time in relation to the number of moves the engine is supposed to play. But that would not be the right strategy and many engines possibly lose on strength because of such omissions.

For me, the right strategy would be to allocate time the way strong human players do: allocate more time for the opening and middlegame stages, and proportionately less for the later endgame stages. There are basically two reasons for such an approach. The first one is, of course, the fact that earlier stages of the game are generally more complex (the number of variations is, obviously, considerably bigger than that for later stages) and you will need more time in order to arrive at the right solution. The second one is that when you spend more time for the earlier stages, there are definite chances that by the time you get to the more advanced stages you will already have a comfortable enough position, or even a comfortable advantage, because your previous moves have been thoroughly considered, so that reaching appropriate decisions at fairly less complex positions would be less time-consuming. It is your opponent that will have to think more to find a way out.

I think this could be a stumbling-stone for some engines. A possible solution would be to allocate time proportionately to the complexity of the position, which will generally mean proportionately to the overall number of pawns and pieces on the board. Moves for positions with 32 pawns and pieces on the board should be allocated double time in respect of moves for positions with only 16 pawns and pieces overall. Some system might be elaborated to decrease the allocated time for a move gradually with each 4 objects off the board. This would be both realistic and strategically justified.

### **Why playing games for testing purposes against a wider range of opponents is a necessity**

When testing improvements, it would be necessary to play not only as many games as possible, but also games against a wide range of opponents. Wide range of opponents would mean at least 5 or 6 different opponents that have markedly distinct styles of play, i.e. some being good attackers, others good positional players or with an inconspicuous style of play, etc. In any case, the opponents should have a different style of play. Chess is a very rich game and playing against opponents sharing similar traits would mean that basically you are testing your luck against one and the same opponent in separate matches. The results might be misleading.

In chess winning a game would mean that you are able to exploit your opponent's weak points, while your opponent is not able to do that with yours. This could hold true for a longer match. That is the reason why it is not very much telling when you play games against a predecessor version - the newer version will have some improvements with which the older one will not be able to cope, while the opposite would not be true as both versions will share more or less the same genes, and the newer version would be pretty much familiar with its opponent's style. When you play games against opponents of very different styles, chances are big that while you will be able to exploit the opponent's weaknesses, your opponent will be able to exploit yours too, if there are such. The opponent will just have weapons for which you might not have a sufficient defence, the engines would simply have different genes. So that, in the end, testing against a pool of engines with distinct style would provide much more realistic results. It is quite the same in human play - there are easier opponents and difficult ones, but that would not necessarily mean that losing a match in a convincing way against a specific opponent would label you as the weaker player, maybe this is just a difficult opponent having weapons for which you do not have appropriate defence.

That is why you need to play not only as many games as possible, but also against as many opponents with distinct styles of play, to more or less have a glimpse of the truth.

### **Zugzwang**

Everyone knows that zugzwang is the situation when upon a forced move one of the sides loses the game. In order for the game to reach a zugzwang situation, the stronger side should have a considerable advantage, but maybe not quite sufficient for a win. Zugzwang usually happens in the endgame, when there are a smaller number of possible moves and chances are the weaker side might run out of moves.

To check if this is the case, for situations when you have a considerable advantage in score, but do not find a way of winning, resorting to a technique quite the opposite to what a null move is might be indicated. Instead of playing 2 consecutive moves yourself, you concede that right to your opponent. If win is spotted in that case, that might help find a way of playing a move yourself that does not compromise your good position, but just concedes the right of move to the other side. That would usually be a move with a fairly mobile piece, for otherwise it would be difficult to maintain existing threats. Rooks and bishops would be the usual suspects. So it might be useful to check moves with rooks and bishops first, and then reach some conclusions.

Possible indications for a position of zugzwang could be:

- a situation in which all enemy moves would lead either to loss of material, or penetration of the king of the other side

- an enemy piece defending more than one objects
- the existence of a fortress
- restricted mobility for the enemy king
- the existence of backward, isolated or double pawns in the enemy camp
- enemy bishop with enemy pawns on squares the colour of the bishop and fixed, etc.

Sometimes zugzwang happens in the middlegame, too, but this would not be of interest, because the weaker side should really have a very hopeless position.

### **Stalemate**

Stalemate is a drawing technique.

Stalemate is the case when upon forcing a move on the enemy side, the own king and, possibly, pieces, have no available mobility squares. That ends, of course, the game in a draw. Stalemate occurs in positions with big material advantage for one of the sides, usually close to or more than 3ps. The materially disadvantaged side seeks out stalemate as its last salvation resource.

Stalemate would be possible in positions sharing the following characteristics:

- very low mobility of the own king (for the materially disadvantaged side)
- very low mobility of other own remaining pieces
- most available pawns being fixed

Bonus points could be dispensed for looking for the following moves:

- further reducing the mobility of the own king +50cps
- further reducing the mobility of other own available pieces +50cps
- fixing remaining own pawns +50cps (as obviously such pawns' mobility becomes zero)

Looking for possible sacrificial moves, offering what own material remains on the board, would also be indicated, as in this case, obviously, with the disappearance of pieces, own mobility will decrease.

+2ps for such sacrificial moves

### **2 own knights controlling one and the same square**

2 own knights controlling one and the same square would be due some tiny penalty, as there are chances that the knights will defend each other in the future, which is generally an unfortunate relationship.

- 2mps if the controlled square is empty
- 1mp if the controlled square is occupied by an own piece

### **Attacking an enemy pawn that could not be defended by another pawn on the next move**

Own pawn attacking an enemy pawn that could not count on the support of another pawn on the next move would be due some small bonus (+5mps), as such an arrangement could have a positive impact on the pawn structure that will be constituted.

### **Lead pawn of a group of at least 3 ps with the root pawn of the group being part of the king shelter**

+5cps additionally for such an arrangement, as lead pawns are good in warding off enemy pieces

### **Mobility for pawns in terms of capturing and advancing**

When the pawn has available capturing moves, this type of mobility could get a bit higher values, 6 or 7 cps, as tactical relevance rises.

### **Weak spot with an existing enemy bishop the colour of the weak spot**

-2cps in such a case, as the enemy bishop could attempt a transfer on the weak spot

### **Linear pieces simultaneously attacking and x-ray attacking 2 enemy pieces of same capacity**

Linear pieces (bishops, rooks and queen) simultaneously attacking and x-ray attacking 2 enemy pieces of same capacity (eg. a bishop attacking and x-ray attacking 2 knights, or rook attacking and x-ray attacking 2 bishops) will deserve a small additional bonus (+3cps), as pieces of same capacity would be more awkward in defending, moving.

But that would be considered only when there are no other enemy pawns or pieces in between the 2 attacked pieces of same capacity.

### **Separate passer defended by a minor piece inaccessible to enemy attacks**

A separate passer defended by a minor piece that can not be attacked by enemy pawns at all, and by enemy minor pieces within the next 3 moves, would score a small additional bonus, as this will help the passer last longer on its current position.

+5cps in this case

### **What would be a good chess rule**

In chess there are always exceptions to the rules, because simply the number of possible variations is absolutely tremendous. A good chess evaluation rule would be one that would be valid in a large percentage of situations - a threshold of 80% might be a good measure. But it is really difficult to attain that threshold if you do not specify and subspecify a lot.

Control of center would be a good chess evaluation rule with approximately 80% coverage.

Weak pawns would not be that convincing, with an average coverage around 70%.

Sometimes, so called weak pawns (backward, double, isolated) are not a disadvantage at all, but much the opposite.

Attacking the enemy king would be a good decision in some 75% of cases, but there are instances when it is necessary to pay more attention to the own king security and withdraw attacking pieces for that purpose. This would be true especially in double-edge positions.

Rook on an open file will not always justify its values, depending a lot on enemy pieces' control of squares along that file, especially squares of penetration.

Rook on the 7th rank might be trapped on occasions.

Piece positioning will usually score very high, some 90%, but there are instances when a very well placed minor piece on the 6th rank, for example, would not quite deserve its bonus, in case it is far from the center of events, usually on a side with all pawns on that side being fixed or semi-fixed.

The closest to a perfect rule could come only mobility. 95% coverage would be a good measure, but on rare occasions, especially dependent on extreme tactics, attacks might win the day.

Lead pawns might score almost perfect, as they seem to be an advantage in all situations, just as root pawns seem to be a disadvantage in all situations, but the problem with lead pawns is

that, when they are not fixed, they are structurally less enduring, and when they are part of fixed structures, drawing possibilities for the weaker side might increase.

Defending the own king is always a good decision, even it is not being attacked at the moment, as this could happen in the future. 75% would be fine. But on many occasions when you are not attacking and just defending, you will lose the initiative, and that certainly means a lot.

Storming pawns, both storming the enemy king position and the other side of the board, are always a good choice, but the rating of around 80% might be due to the not so infrequent cases when advancing such pawns would be counter-productive because of insufficient control of center.

Space advantage is a tricky parameter on some occasions (75% coverage), as there are instances in which the center of events might be unrelated to the area where space advantage is gained.

Relative strength of piece configurations is also a tricky one, and even more so (60-65% coverage), because here a lot will depend on a variety of other factors, so that a configuration of stronger material value might practically be weaker in the context of a specific setting.

Two bishops are generally an advantage, but would not be always so. There are cases when 2 knights are stronger (with a bigger number of fixed pawns), and also in the opening stage the power of the 2 bishops is not undisputed. The overall rating would not exceed 70%.

Passers constitute an advantage in well over 85% of cases, but sometimes separate passers might be also a weakness, it all depending on the number of enemy pieces attacking such passers, and the number of own pieces defending them.

The conclusion could be that in order for a rule to be valid in as many situations as possible, you should specify, and specify a lot at that. But even when you do that, there will still be a not insignificant number of variations defying any evaluation rule.

### **Scoring some major parameters in the middlegame and endgame**

Mobility and space advantage would be two parameters that might have different weight in the middlegame and endgame.

I think leaving unchanged those parameters throughout the game would not hurt evaluation a lot, but if we want to be precise, both parameters might score 20% lower in the endgame.

The reason for scoring mobility lower in the endgame is that in later stages piece mobility is usually good enough with less pawns and pieces on the board, while other factors like weak pawns, active kings, etc., become relatively more important.

Space advantage should be weighted lower in the endgame for similar reasons, because, in distinction to middlegame, the good health of less pieces will depend on it. Still, space advantage, coupled with other advantages of different nature, might prove decisive on many occasions in later stages. Therefore, you should proceed carefully.

Of course, weighting might be fine-tuned by using calibration with respect to the overall material strength on the board (pawns), in intervals of 8 or 4 pawns and pieces.

### **Defensive shield**

#### **Simple endgames in terms of king penetration possibilities**

In simple endgames (just 2 or 3 pieces each side, no queens) with very small advantage for one of the sides, one of the most important factors might be the ability of the king of the stronger side to penetrate the enemy position.

+50cps is due if such a penetration is spotted

The weaker side might defend successfully, if it manages to stop the enemy king from penetrating its position. For the purpose building a defensive shield of squares inaccessible to the enemy king would be a perfect solution. A defensive shield and fortress would basically mean one and the same thing, but fortress would refer to a smaller area of controlled squares, while a defensive shield would mean controlling all squares on the 4th rank (the 4th rank for the defending side from its own perspective, respectively 5th rank for white, if white is the stronger side and black the defending side), so that the enemy king will not be able to cross the horizontal line separating both camps. Usually control of squares is ensured collectively by pawns and pieces, with pawns most often controlling squares of one colour, while pieces squares of the other colour. For the shield to be complete, squares on the 4th rank not controlled by pawns or pieces, should be occupied either by own, or enemy fixed pawns.  
+50cps for such an arrangement

In some cases, even a material advantage consisting of a surplus pawn would not be sufficient to win the game, if the weaker side manages to build such a defensive shield. Engines usually do not recognize such patterns.

On rare occasions a defensive shield could also be constructed one rank further back, on the 3rd rank from the point of view of the defending side.

#### **Penalties for undefended pawns**

Any pawn that is not defended by either another own pawn, or an own piece (kings will be included into the defence) will score a penalty of -4mps, as, obviously, double attacks could be ruinous for such pawns.

#### **Rook behind an own pawn able to advance**

Rook behind an own pawn that is able to advance is definitely a positive development.  
+2mps for such an arrangement in any situation

#### **Rook immediately in front of own king vertically**

A rook immediately in front of the own king vertically (eg. wkg1, wrg2) will score some additional bonus points to the points already dispensed for a rook being part of the king piece shelter, as this is an optimal square for a rook defending the own king.  
+2cps

#### **Queen and 2 bishops in terms of the ability of the configuration to build alternate tandems**

Queen and 2 bishops will score an additional bonus to other bonus points (for example, dispensed for complementarity) because of the ability of the configuration to build tandems on alternate diagonals.  
+10cps

#### **Pieces attacking the enemy king shelter, defended by own pawns or pieces**

Pieces that are attacking the enemy king shelter and which are defended by either own pawns, or other own pieces, will deserve 1/4 higher value for attacking the enemy shelter, as this is tactically justified and might help maintain the attack for a longer time.

### **Additional bonus for closeness of a pawn to the enemy king when just one square apart in terms of controlling the square immediately in front of the king vertically**

When a pawn that is just one square apart from the enemy king controls the square immediately in front of the king vertically (eg. wph6, bkg8), it will get a bonus of +5cps. The standard value might get a pawn controlling the square immediately in front of the king diagonally (eg. wpf6, bkh8).

### **Pawns attacking the enemy king shelter**

Pawns attacking the enemy king shelter will be due, of course, some bonus points.

+10cps for any square of the immediate shelter zone, attacked by such a pawn

+7cps for any square of the wider shelter zone, attacked by such a pawn

### **Unwise captures**

Moves with pawns capturing enemy pawns or pieces capturing enemy pieces, when the recapturing enemy piece improves its general piece positioning, should be avoided, as enemy pieces get unnecessarily developed.

-5cps for such a move in any situation

### **Pawns attacking the immediate enemy king shelter in terms of specific squares attacked**

Pawns attacking the immediate enemy king shelter will receive differentiated bonus points in relation to the specific squares they attack.

Attacking the square immediately in front of the king vertically will score 1/3 higher than attacking squares immediately in front of the king diagonally.

Attacking squares on the rank where the king is placed (eg. wpe7, bkg8, or wpe6, bkg7) will score 2/3 higher than the default.

### **Additional bonus for pawns for general positioning in terms of files when defended by other pawns**

Regular pawns (except those on end a and h files) will score higher values for general positioning in terms of files (centralisation), when they are defended by other pawns, as in this case the chances that the pawn retains its advantage in relation to a more central location will increase.

1/3 higher bonus for such pawns, if defended by another own pawn

2/3 higher bonus for such pawns, if defended by 2 own pawns

### **Smart evaluation of attacks, general positioning and mobility for pieces**

Obviously, these three factors are the most important parameters for pieces. When these three factors do not exhibit considerable differences for each piece, the overall assessment of the piece value and role on the board would be highly positive. When there are bigger differences between the 3 parameters, this would be a signal that something might be wrong with the specific piece. Therefore, variations with small differences for the 3 parameters might score 15% higher evaluation overall for the piece, while variations with considerable differences (very small mobility, although very good attacking potential, or very good positioning but relatively bad attacking potential) might be discarded without much thought. If one of the factors is unusually low, that could not possibly be compensated in a sufficient degree by other factors. Small and very small differences between the parameters would mean

harmonious development, and harmony is synonymous with strength, as chances will be much lower that something could go wrong.

This could be a successful method for cutting large, relatively insignificant, portions of the tree. Maybe even the best available method, as this would concern the most important features of a chess position. An excellent approach might be to first consider variations with smallest possible differences between the 3 parameters for each piece, then go to variations with bigger and even bigger differences, but still small enough, until reasonable variations are exhausted. Variations with extreme differences might be dropped altogether.

### **Same piece simultaneously attacking more than one enemy pieces**

One and the same piece simultaneously attacking more than one enemy pieces would be due well deserved additional bonus points, as this might be very important in cases of extreme tactics. Attacking kings will not be considered here, and also only direct attacks will be counted, no x-ray attacks.

+5cps when the same piece attacks 2 enemy pieces simultaneously

+10cps when the same piece attacks 3 enemy pieces simultaneously

### **Minor pieces in terms of enemy pawns able to attack them**

Minor pieces will score some bonus and penalty points in respect of the ability of enemy pawns to attack them. These might be meaningful in terms of potential loss of tempo and worsening of piece positioning values.

For each minor piece we will check if enemy pawns are able to attack it within a certain number of moves. Pawns will advance as if they had a continuous right of move, but will not execute captures along the way. It will be irrelevant if the pawn could be captured on some of the moves. We are checking just the potential of attacking minors.

+5cps for the minor piece, if an enemy pawn is not able to attack it within the next 3 moves

-3cps for the minor piece, if an enemy pawn is able to attack it within the next move

-15mps for the minor piece, if an enemy pawn is able to attack it within the next 2 moves

### **Counter-indicated exchange of pieces of same power and capacity**

Exchanging pieces of same power and capacity (meaning exchanging bishops for bishops, knights for knights, etc.) would be counter-indicated for the side whose piece enjoys better general positioning values.

-10cps for such a move in any situation, as usually piece positioning is more difficult to attain/recover than, say, mobility.

### **Scoring of control of center in the middlegame and endgame**

Although leaving the values for control of center unchanged in the middlegame and endgame will not hurt evaluation significantly, it would be more precise to make a distinction between the two stages. 25% lower value in the endgame would be a good assessment, at least what concerns pawn control. The reason is obvious - control of center will influence less pieces on the board in the endgame, becoming relatively less important. Besides, endgame has its specificities, unrelated to control of center.

### **Apex pawns in terms of flexibility**

Apex pawns will receive an additional bonus, as such structures are usually extremely flexible.

+15mps for any pawn the apex pawn is leading on both diagonals

But that would be considered only if at least one of the own pawns adjacent to the apex p is not fixed, and, in the case of larger groups (bigger than 3 ps in all), at least one other pawn pertaining to the diagonal connections, is not fixed.

### **2 lead pawns adjacent horizontally**

2 own lead pawns that are adjacent horizontally will get well deserved bonus for flexibility, as the groups of pawns, led by the 2 ps, forming a single whole, have excellent advancing opportunities without compromising the overall structure too much.

+10cps in such a case

### **Penalties for pawns defended only by pieces**

Pawns that are defended only by pieces, and not by own pawns, will get a small penalty (-2mps for each such pawn), as obviously they represent a weakness.

### **Undefended pieces of the shelter**

Pieces of the own king shelter that are not defended by either a pawn, or another own piece, will be penalised, as such an arrangement is not good.

-2cps

### **Mobile squares for a rook on an open file**

Any free mobile square for a rook on an open file along that file will get a small additional bonus.

+2cps

This might be important in terms of penetration possibilities, relevance of the rook on the specific file, etc.

### **Exchanging a piece for an enemy piece of same power and capacity when the latter comes closer to the own king with that**

Exchanging a piece for an enemy piece of same power and capacity when the latter will move closer to the own king will not be a wise decision. To determine if the enemy piece gets closer to the own king, the number of moves needed for the enemy piece to attack a square of the shelter will be counted.

-2cps for such a move in any case

### **Piece controlling a square from where it can attack an enemy piece of bigger power**

Pieces controlling squares from where they can attack an enemy piece of bigger power will be due a small bonus, as this might have relevance in terms of loss of tempo and mobility issues for the enemy side.

+1cps for any square controlled

But this will be considered only when the square controlled by the piece is not controlled by an enemy pawn or an enemy piece of lower power, and when the piece would not be lost anyway in moving over there.

### **Scoring general piece positioning in the middlegame and endgame**

Obviously, general piece positioning in terms of centralisation, and in terms of files, will be equally valid throughout the game. Piece positioning in terms of space advantage, however, will change in the endgame in relation to middlegame.

30% lower value for general piece positioning in terms of space advantage for the endgame stage might be a good assessment.

The reason for this would be that in the endgame shelters are already not a constant feature, with the kings starting moving around, and piece positioning in terms of space advantage is directly linked to enemy king shelters.

Instead, we might introduce a parameter called overall closeness of pieces to the enemy king. The number of moves needed for a piece to attack a square immediately adjacent to the enemy king (squares in the endgame might be on all 4 sides) will be counted. Each move will get a penalty of -3cps. This will be measured for all pieces. In the end the side with the bigger overall penalty will have bigger difficulties to thwart the activity of the enemy king, wherever it is found on the board.

### **Which variations to consider first**

In terms of individual pieces, variations with closest possible values for mobility, general piece positioning and attacks, should be considered first. Usually among such variations will hide the most promising moves for the piece. Low differences between the different values will mean that the piece is harmoniously developed and it would be difficult for something to go wrong with it. We might proceed from variations with lowest differences to variations with gradually increasing differences, altogether discarding variations with extreme differences, as such moves can not possibly be promising.

When we come to the ensemble of pieces on the board, in the first place variations with lowest possible differences in terms of overall holistic values for piece positioning, mobility and attacks (i.e., the sum of the 3 values) should be considered, as it is quite possible that the best moves are to be found there. Low differences between the values for the different pieces will mean that the pieces are playing in a harmonious way, and harmony means strength. It will really be difficult for something to go wrong with such an arrangement. When one of the pieces has very bad overall values for the 3 factors, that will mean that something could go wrong with this piece, and with the ensemble of pieces as a whole, at any point of time. Very bad values for a piece will not be compensated by very good values for another piece, because coordination of pieces plays a vital role in chess.

When we exhaust the variations with slightest differences, we might proceed to variations with gradually increasing differences for the values for the different pieces, altogether discarding variations with considerable and extreme differences. Truth is not to be found there.

I think such an approach could save us a lot of trouble checking variations that really do not need to be checked. This might be the best and most efficient method of cutting very big portions of the tree without much risk exposure. A pruning threshold of how big the differences in values should be between the different parameters of one and the same piece, as well as between the different pieces, might be introduced.

To check the validity of such an approach, you might pick up some simple endgame mating positions. The shortest mates will be found with individual pieces exhibiting smallest possible differences for mobility, piece positioning and attacks, and with all pieces acting as an ensemble exhibiting smallest possible differences for the overall values for the 3 factors. This rule is as basic a chess rule as it could be. It is valid in mating positions, it will be valid throughout the game. You can actually start evaluating with it.

### **Playing chess without pawns**

Playing a chess game without pawns is as sensible an approach as it could be. Pawns are really only secondary to pieces, and with a temporary dimension at that. Pawns exist only to the point when they are transformed to pieces with promotion, which is their ultimate goal.

But the game is decided by the pieces without the intervention of pawns. You need only pieces to mate the enemy king. And throughout the game, the relationship of pawns to pieces will exhibit more or less the same features. The biggest importance of pawns apart from promoting would be building shelters around the own king to temporarily prevent the enemy pieces from dealing it a lethal blow, but that would be only temporarily and dependent upon the ability of enemy pieces to destroy such shelters. In the end, the correlation of own and enemy pieces on the board will undoubtedly be the decisive factor.

So, when considering evaluation of different parameters, pawns could be considered only after the evaluation for pieces is done. In many cases, pawns can be ignored in varying degrees. Pawn weaknesses, passers, etc., will have their importance only when piece evaluation is in the balance.

Therefore, the evaluation of pieces should be as refined as possible.

### **2 knights defending each other when both are part of the own king shelter**

-5cps additionally to other penalties for the knights, as such a mutual relationship is even more counter-productive when the knights constitute part of the shelter.

### **Mating the enemy king is the ultimate objective**

As mating the enemy king is obviously the ultimate objective in chess, and mate takes precedence over all other possible considerations, scoring all factors related to enemy king attacks 10% higher might be the right strategy.

### **Pieces attacking enemy pieces that are undefended**

Pieces attacking enemy pieces that are undefended will score a small additional bonus because of obvious tactical considerations.

+10mps in any situation

### **Multiple queen attacks**

Queen attacking more than one enemy objects or squares (be it pawns, pieces or squares of the king shelter) will be due higher attacking value, as it will be more difficult to find sufficient defence to such attacks, simply because capturing and attacking opportunities with a timeframe would increase.

50% higher attacking values for both objects or squares attacked in case of a double attack (but that will not be considered when both are part of the enemy king shelter)

70% higher attacking values for all objects or squares attacked in case of triple, quadruple attacks, etc.

### **Bishop outposts**

Bishop outposts will be squares on the 5th and 6th ranks, that are not possible to attack by enemy pawns at all.

+1cp for a bishop on such a square on the 5th rank

+3cps for a bishop on such a square on the 6th rank

Bishop outposts will be important not that much in terms of space advantage, but mainly in terms of control of squares into the enemy camp. Of course, the bishops will be due much higher bonus for space advantage, too.

### **Pieces controlling continuous squares of the own king shelter**

Pieces controlling continuous squares of the own king shelter (that would be linear pieces) will be due a small additional bonus for defence of the king shelter, as, even if such pieces are forced to quit their position, they might still be able to maintain control of all those squares by retreating to a location along the line they are currently on.

+15 mps in the case of a rook controlling such continuous squares, as this would usually be a rook controlling squares of the forefront shelter on the 3rd rank (for white), where it could also move itself.

+10mps in the case of a bishop controlling such continuous squares (eg. wbc6 controlling the area f3-h1 along the diagonal with wkg1)

+5mps in the case of a queen

### **King with mobile squares only on an end line of the board**

King with available mobile squares only on an end line of the board (eg. files or ranks on the end of the board - the a1-a8, a8-h8, h8-h1 and h1-a1 lines) would deserve a decent penalty, as chances for a mating attack would increase.

-20cps

Such developments can happen sometimes in the middlegame, but most often in the endgame, with sufficient mating material for the other side.

### **Double rooks on a closed file behind an own pawn able to attack an enemy medium pawn that is fixed**

+3cps for such an arrangement, as this could help not only to open a file, but also to take control of it

### **Knight next to own king in the center**

When the king has had difficulties finding shelter on one of the sides, and is staying in the center of the board (maybe not the focal center, but close to the wider center, in any case), the own knight would constitute a perfect defensive piece shelter, with the absence of many own pawns around.

+10cps for such an arrangement, as, in distinction to a bishop, the knight not only covers the king, but also controls a range of important squares, from where the king could be checked.

Such a situation will happen most often in complex endgames, especially with queens on the board.

### **Discovered check**

Discovered check is a technique where a piece stays in the way of another own linear piece (a rook, queen or bishop) on the line where the enemy king is also to be found, and where, if it were not for this piece in between the linear piece and the enemy king, the king would be checked.

Discovered check is a very dangerous situation for the enemy king and pieces, because, if check is discovered, the side with the king will be forced to defend the king first (either by moving the king away from the line of the checking piece, or by covering it with an own piece; but possibly also by taking the checking piece), which will create ample opportunities for the piece discovering the check to capture or pose threats to other enemy pieces and pawns. It is very difficult to defend from a discovered check and therefore, wherever possible, such situations should be avoided. A double discovered check, with the piece discovering the check also checking, would be mate.

At least +1p would be indicated for such a setup in the usual case.

### **Wise recaptures with more than one recapturing possibilities when all would lead to a deteriorated piece positioning for the recapturing piece**

With exchange of pieces, when there are more than one (usually two) recapturing possibilities, but all (both) would lead to a deteriorated general piece positioning value for the recapturing piece, it would be indicated to take the enemy piece with an own piece of bigger power. The reason for this is that more powerful pieces are usually more mobile and they could recover more easily both their deteriorated positioning values, as well as, possibly, a worsened mobility.

+15mps for such a move in any situation (bishops would enjoy a status of a more powerful piece in relation to the knight, when considering this)

### **Why evaluating more is an advantage**

When you evaluate just a couple of parameters for a specific piece/configuration of piece or pawn/configuration of pawns, it is much more likely that with developments taking place in the future, some of the evaluated parameters will not be relevant any more, so that your evaluation will be based on just a very tiny set of factors. Obviously, many things could go wrong in such a situation. And the further down the tree you go, the less realistic the evaluation will become. When you evaluate more parameters for a specific piece/pawn, chances are that future developments will make some of those parameters irrelevant, but a wide number will still be valid. that will ensure that evaluation will be precise in a sufficiently wide range of situations. Of course, with depth evaluation will become less precise, as the environment will be completely different, but a remaining number of relevant parameters will guarantee at least a fair amount of precision. Obviously, the more you evaluate, the less the impact of changes with a timeframe will be.

If you evaluate just 4 parameters, in time of those 4 only 2 will remain relevant, and that means that those 2 parameters will be responsible for the outcome of a wide variety of situations. In half of possible cases those 2 factors will provide untrue/lopsided results, because other factors will be more important at the moment. If you evaluate 20 parameters, in time a portion of those might become irrelevant, but your overall evaluation will still be based on the remaining not insignificant number of parameters, so that chances will increase for a successful assessment of a wide variety of situations. further down the tree the precision of evaluation might become lower, but it will still be present. If you evaluate 200 parameters, obviously, you will be able to evaluate precisely a very wide range of positions at lower depths, and still decently wide range of positions at bigger depths. Therefore, it is difficult for evaluation to be counter-productive.

Trying to tune the parameters as well as possible instead of evaluating more will be able to only alleviate problems, but just to a certain depth. Tuning can never replace abundant evaluation. No matter how professionally the parameters are tuned, if they are small in number, they will inevitably produce lopsided results.

### **Space advantage on the side where the enemy king has castled in terms of specific pawns**

Space advantage on the side where the enemy king has castled can be differentiated in relation to the specific pawns gaining it.

The pawn closest to the center (f and c pawns; central e and d pawns will not be considered here) will get 1/3 higher value than the next closest to the center pawn (g and b pawns), which

in turn will get 1/3 higher value than the end file pawn (h and a). The reason for this is that some pawns stand less in the way of own attacking pieces than others. Such bonus points will be dispensed separately to the bonus points dispensed to pawns gaining space advantage in terms of files (centralisation).

Hub pawns will not be considered as being lead or root pawns of diagonal connections. It is meaningless to consider them as lead pawns, when there is another more advanced pawn in the entire group. And root pawns they are not, because they are defended.

### **More than one undefended objects on the same line**

More than one undefended objects on the same line (pawns and pieces on diagonals, files and ranks) will score some additional penalty (-2mps for each such object), because of obvious tactical implications.

### **Pawn whose advance is stopped by an enemy pawn on an adjacent file, and supported by an own p on other adjacent file, different from the one the enemy p is on**

Eg. wpe4, bpsd6,c6 Such a pawn (d6 in the above case) represents a weakness, although very small. This would not be the case if the second own pawn was to be found on the file the enemy pawn is on (bpe6 in the above case instead of bpc6), as usually in such a situation own pieces would have sufficient control of the square in front of the advancing pawn. It is all matter of piece control of that square.

-5cps for such a pawn might be a good measure

Such pawns will be considered only on the 7th and 6th ranks, because of piece control implications, with the more advanced rank scoring a bit lower penalty.

### **Pawns storming the enemy king position in terms of specific pawns storming**

There are reasons to differentiate between the pawns storming the enemy king position.

+15cps for end file h and a pawns in relation to g and b pawns

+15cps in turn for b and g pawns in relation to f and c ps

End file h and a pawns will obviously be most dangerous, because, when opened, the end file is the best attacking thoroughfare, as squares along that file, pertaining to the king shelter, are most difficult to defend due to reasons of distance. Besides, the end file is the easiest to open, as the attacking pawn meets less resistance in terms of ps able to challenge its advance.

G and b pawns will still be very dangerous, especially in tandem with end file ps. They are met with more enemy pawn resistance, but they are on the file where usually the enemy king is to be found.

F and c pawns are not so much deserving in values for this, because they usually have more important functions of central control; besides, it is more difficult for them to advance in the center.

### **Relative importance of the pawns of the immediate king shelter with king on g1**

It is possible to differentiate between the pawns of the immediate king shelter when the king is placed on g1. Just as in the case of specific pawns storming the enemy king position, the values for the specific pawns are difficult to be set in stone, and their relative importance will depend on a variety of other factors. Still, the following general rules might be true in a majority of positions:

The pawn immediately in front of the king vertically (g2) will be the most important pawn. When it is missing, the king could be attacked frontally, and also the long white diagonal will be open to enemy pieces.

The pawn immediately in front of the king diagonally on the end file (h2) will be the second most important pawn of the shelter. The reason for that is that it is part of the defensive tandem with the g pawn; besides, as its square belongs to the end of the board, it is more difficult to defend.

The third pawn of the immediate shelter (f2) will not have the importance of the first two pawns. It has more fitting roles in the sense of helping to control the center and attacking enemy central pawns.

+15cps for the g2 p in relation to the h2 p

+15cps in turn for the h2 p in relation to the f2 p

### **Fixing an enemy pawn storming the king position**

Fixing an enemy pawn storming the own king position will be a successful method.

+10cps for an own pawn doing this

But, of course, you should proceed carefully with moving pawns of the king shelter.

### **Indicated recaptures with improvement of the piece positioning values**

When faced with the choice of recapturing an enemy piece in terms of different possible recaptures with own pieces, you should pick up a variation with a recapturing piece most substantially improving its general piece positioning values.

+5 cps for such a move in any situation

### **Scoring x-ray attacks on files with a pair of fixed ps on the file in between the attacking and attacked pieces and pawns**

When there are a pair of fixed ps on the file in between the attacking and attacked pieces and pawns, x-ray attacks could be weighted 2 times lower, as with such an arrangement it is much more difficult to make use of this tool.

### **Squares of the immediate king shelter defended only by the king**

Squares of the immediate king shelter that are defended only by the king might get an additional penalty, because of obvious tactical implications.

-5cps for any such square

### **Irremovable blockers**

An irremovable blocker would be a piece blocking an enemy pawn, that could not possibly be expelled from the blocking square it occupies. Usually this will happen with blocking when part of bigger fixed structures. The specificity here is that not only the knight, but also the bishop and rook, and even the queen, are potentially good blockers with such an arrangement.

+20cps additionally to other blocking bonus points for such a blocker

For the purpose we will check if there are squares from where the blocker could be attacked by enemy pieces, even with same power. If not, then we might dispense the bonus. Such blockers would occur most often when entire sides, but also part of the center, are closed, with the blocking side having some other advantages, for example king side attacks. Considering such a blocker when playing a game along the lines of compensation would be ideal.

### **Piece defended by 2 own pawns when they do not form a group of ps**

A piece defended by 2 own ps that are not forming a group of ps could receive a tiny bonus, as there are chances that capturing such a piece will reconstitute a single group of ps.

+1mp

### **Forced win of tempo in the endgame by checking the enemy king**

Potential forced win of tempo in the endgame along the lines of checking the enemy king could be considered with success, because of important tactical implications. With a reduced choice of moves in the endgame, a forced win of tempo might sometimes be essential.

+3mps for any square from where the enemy king could be checked by either pawns, or pieces

### **Weak spot of the king position with enemy bishop of the same colour**

A weak spot of the king position with an existing enemy bishop the colour of the spot would constitute an obvious disadvantage with regard to own king security.

-5cps for such an arrangement

### **Blocking a pawn storming the own king position**

Blocking an enemy pawn, storming the own king position, would be well-advised, if at all possible, as an attempt to stop the pawn from going further.

+3cps for own pieces doing this

But this should be possible mainly when the storming pawn is single, for otherwise an enemy p on an adjacent file could easily drive away the blocker.

### **Rook on a semi-closed file**

A semi-closed file would be one with only one own pawn on it, in distinction to a closed file, where there would be one own and one enemy pawn.

+7cps for a rook on a semi-closed file, as there it could usually develop better activity than on a closed file.

+12cps for double rooks on a semi-closed file

Different other tandems and triplets of heavy pieces might get gradually increasing values.

+20cps for rook on a semi-closed file against the enemy king position

+30cps for double rooks on a semi-closed file against the enemy king position

Different other tandems and triplets of heavy pieces against the king position might get gradually increasing values.

### **Attacking the king shelter from both sides**

Attacking the enemy king shelter from both the queen and the king side, wherever the king is placed, will receive an additional bonus, as attacks tend to be more impetuous with such an arrangement.

+20cps, if there are pieces attacking the enemy king from both sides