



by Christian Crevecoeur

Woodcarving "Knight and Lansquenet" by Albrecht Dürer

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1 Introduction

Knight & Lansquenet is a simple yet remarkable strategy game for the Microsoft Excel platform. The idea for development was the creation of a combat simulation with an ancient setting that looked good enough, was easy to use up to running fully automatic, and required just the right level of attention to provide background entertainment during lengthy telephone calls. It is an epic battle of two or three medieval nations struggling for supremacy on your screen. They begin with just a few individuals which reproduce themselves, quickly piling up impressive hosts which engage each other in deadly assault. In their way they may face natural obstacles like rivers which take their toll on the crossing troops, or mountain ranges which are impassable and must be circumvented. They defend their own castles and strongholds by any means including artillery or try to conquer those of their adversaries. The castles are reigned by kings which are, apart from enemy action, immortal and capable of creating new troops all by themselves. The battle continues until one nation completely prevails over all others. You, the player, may decide to actively take command in favour of one hopefully lucky nation. Try to be the knight in shining armour that rescues an inferior nation from its demise. The alternative is to just be the observer of the unfolding melee, like those ancient historians who passed on to us the tales of the classic battles they witnessed. This choice also offers the amusing option to make some virtual money by betting on who is going to win or to be in second place.

Curious? Here is how it works.

Disclaimer

Knight & Lansquenet is freeware and comes AS IS, without any guarantees or warranty. The program may be distributed free of charge as long as all of its components are kept together unchanged in one package with no additions or omissions. The author is not responsible for any damage or losses of any kind caused by the use or misuse of this program. The author is under no obligation to provide support, service, corrections, or upgrades.

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2 Installation

Knight & Lansquenet is a Microsoft Excel VBA application. It has been developed on EXCEL 2010 but does not use any of the new features introduced since EXCEL 2007. It should run on any installation of EXCEL 97 or higher.

1. Copy and unzip Knight&Lansquenet_1.0.zip to your hard disk.
2. A folder Knight&Lansquenet_1.0 is created containing the files as given in the following table:

\Directory name / File name	Description
\bitmaps	Folder containing bitmaps of active command indicators.
\sounds	Folder supposed to contain sound files, see file readme.txt in folder and below.
Knight&Lansquenet.xlsb	The application in EXCEL 2010 binary format
Knight&Lansquenet.xls	The application in EXCEL 97/2003 format
Knight&Lansquenet_1.0.pdf	This user manual in PDF format.

3. Double-click Knight&Lansquenet.xls[b] to open in EXCEL.
4. Activate macros, otherwise the game won't work.
5. Follow the instructions of this manual.
6. Have fun.

2.1 Sound Setup

Knight & Lansquenet comes without preconfigured sound files to avoid copyright troubles. Tons of sound files can be found on the internet, which are free for private use. Download appropriate files to directory Knight&Lansquenet_1.0\sounds and rename them according to their intended purpose as given in the following table.

Sound filename	Trigger event	Sound suggestion
begin_battle.wav	Battle has been started	Fanfare
impact.wav	Catapult bullet hits the ground	Explosion
king_dead.wav	A king has died	Outcry or Gong
king_crowned.wav	A king has been crowned	Fanfare
nation_gone.wav	First nation has been defeated	Gong
betting_office.wav	Window "Betting office" opens	Fanfare
end_battle.wav	Battle is over	Fanfare

Note that only files in .WAV format are supported. When a trigger event occurs, *Knight & Lansquenet* looks up the sound file with the associated name and plays it if it could be found. Not existing or misspelled files are silently ignored. An already playing sound is cut off by a new sound. Game option "Use sounds" must be turned on for sounds to be played.

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2.2 Quick Start

If you are not a passionate manual reader, this is for you.

After loading *Knight & Lansquenet* into EXCEL you are just two clicks away from medieval combat action:

1. Press button "Enter command post", and a window of that name pops up.
2. Press button "Start" in window "Command post" and the battle will start right away. A medium-sized battlefield with mountains and rivers is generated, populated by three nations which start their campaign from their respective main castles, at first seeking to occupy initially forsaken fortresses. Individual soldiers are represented by single cells in the colour of their respective nation, shaded according to their age.

What happens next is pretty self-explanatory. Just watch and enjoy.

3 Game Setup

Before the ancient war begins the player makes a number of choices which influence the game's character and duration.

3.1 Battlefield Size

The battlefield is divided into six square areas, three columns and 2 rows, the so-called *battle zones*. For that reason the battlefield size has always a 3:2 ratio. You can choose one out of eight sizes: 42x28, 54x36, 66x44, 78x52, 90x60, 102x68, 114x76, or 128x84 cells. Note that with growing size the scenario becomes more complex or "realistic", but the update rate declines and conflicts may take longer to resolve.

3.2 Nations

Choose which nations shall contend with each other. There are three nations with related colours red, green and blue available. You can choose all three nations or every possible combination of two. Names can be entered for all nations as you like.

3.2.1 Main Adversaries

If three nations are in the game, you can determine for each nation which of the other nations shall be its main adversary. This can be one of the other nations or both. The nation will concentrate its campaign on the chosen main adversary. This must not be mixed up with an alliance with the other nation, however. If running into the other nation's troops by coincidence, they will be attacked as well. After one nation has been extinguished, the two remaining nations will continue to fight each other anyway. The main adversary settings can be changed anytime during battle. After the battle is over the setting of the preparation phase is restored.

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3.2.2 Bravery

Decide per nation which risk it shall consider acceptable for attack. The resulting behaviour is either attacking an enemy cluster or withdrawal, dependent on the current friend-foe ratio. If set to 50%, an enemy cluster will be attacked if it is not stronger than the own cluster. At 100%, an enemy cluster will be attacked regardless of the own strength. You can choose to either set the bravery value manually or to let it be calculated dynamically from the overall strength ratio. The bravery settings can be changed anytime during battle.

3.3 Mountains

Mountains are topographic features which have a strong influence on the tactical situation because troops cannot set foot upon mountain fields. Mountains can be turned on and off as a whole, or configured regarding the percentage of the battlefield they cover, their average size, and variation in size. Note that too many and especially too large mountains can hamper troop mobility to an undesirable extent.

3.4 Water

In *Knight & Lansquenet* water occurs either as rivers or as puddles in artillery impact craters. Water can be passed, but has an ageing effect on troops which are on water fields. Ageing depends on the number of *adjacent* water fields which are not occupied by other troops, multiplied by a configurable factor. Note that setting this factor too high can render water areas practically impassable.

3.4.1 Rivers

Select the number of rivers to run through your battleground, from 1 to 8, or switch them completely off. Rivers are randomly generated during game initialisation and do not change afterwards.

3.4.2 Water in Impact Craters

Castles defend themselves using artillery which leaves impact craters in their vicinity. You can choose these craters to be filled with water, allowing strongholds to step-by-step create a moat to enhance their defences.

3.5 Castles

Choose whether castles shall be used or not. If activated, every nation starts from its home castle, manned with a king and a small garrison. Otherwise the game is initialized with a configurable number of soldiers for each nation which are randomly distributed across the battlefield. If castles are used, decide how many auxiliary castles shall exist. Auxiliary castles are smaller than main castles, and initially unoccupied. The battlefield must have at least a size of 66x44 for auxiliary castles to exist. A single battle zone can hold up to one castle. There are 4 types of castles, differing in size.

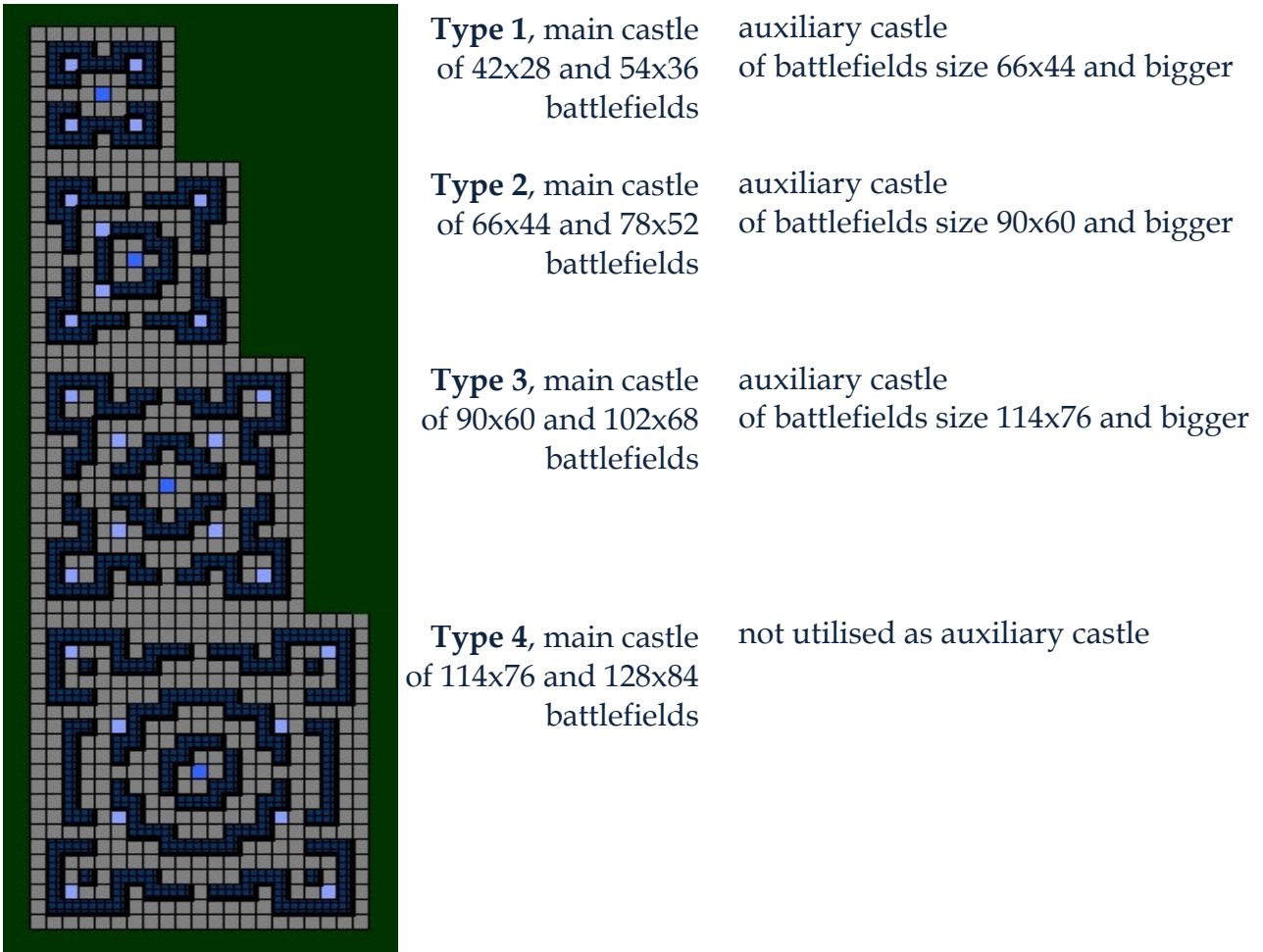


Figure 1. Castle types

Available castle types depend on the battlefield size. Castles are placed on the battleground during preparation phase, with their sizes determined automatically. They show their owner’s colour. Unoccupied castles and castles which former owners have all been driven out, but which are populated by soldiers of *two* other nations are grey. A castle’s gates are always open, because attacking troops cannot climb the walls. Castles do not wear down in combat and their walls are never destroyed. There are a number of configurable parameters available for castles, see chapter 9.3 for details.

4 **Artillery**

Castles are equipped with catapults for self-defence. They are automatically fired when a castle is under attack. You'll find that the attacking troops have no artillery at their disposal although they had in real history. That is to provide a little advantage in favour of the castles to compensate for the disadvantage of their always open gates, which for sure were closed during the real battles. When a shot is fired, it is displayed as a cell in fire-like colour, followed by a shaded cell imitating trailing smoke. The brightness of the bullet colour reflects the current altitude of the bullet. Troops below are unharmed as long as the bullet is in the air. At impact a crater covering 12 cells is drawn and all troops in it, no matter if friend or foe, are killed in the blast. Hits in water colour the water in lighter blue indicating a splash. The effect of hits on mountain fields is configurable. Either hits have no effect and are not displayed, or the crater is drawn and the mountain fields are permanently removed. The latter can have an influence on the tactical situation if a new passage through a mountain range is opened allowing troops to push through. You can decide whether impact craters shall be filled with water or not, see chapter 3.4.2 . The craters themselves have no lasting effect and are wiped out by the troops moving up. The puddles of water nevertheless will remain until the end of the battle. The catapults always try to fire at the strongest cluster of enemy troops, but be aware of the fact that these weapons are pretty inaccurate, so "friendly fire incidents" may occur every now and then.

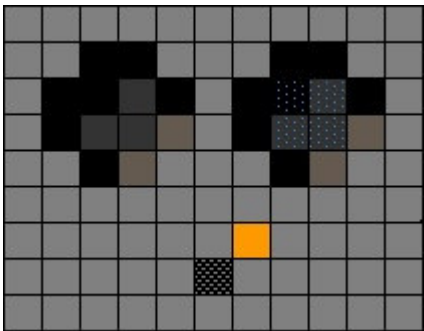


Figure 2. Impact craters, dry and filled with water, and a bullet in flight

There is just one shot at the same time per castle. Initially all castles have the same - configurable - number of bullets. To be able to fire, castles continuously produce new bullets at a production rate of <configurable> days per bullet. A castle's current ammunition inventory is reported in window "Command post", in the control tip text of the battle zone button controlling the battle zone where the castle is located. Navigate the mouse above the battle zone buttons to inspect the inventories. When a castle is captured its ammunition is completely destroyed.

5 Soldiers and Kings

Since *Knight & Lansquenet* is about human conflict, the key players are the soldiers of the nations involved. In contrast to real life, the fighting lasts not just for some hours or days, but for several *generations* of individuals. The ability of peoples to reproduce themselves, giving them the chance to build up new striking force while the battle lasts on, is one of the game's most fundamental concepts. Ordinary soldiers have a lifecycle common for all fellow soldiers of their respective nation. Life duration varies between 15 and 200 days, with a default value of 81 days. If you think this is short, you're right, but note that a *day* is defined as the basic measure of time, equalling to one screen update cycle. It is just a poor compromise between much too short in terms of lifetime and much too long in terms of battle action.

There are two different kinds of people – ordinary soldiers and kings. Both groups have their own set of properties.

5.1 Soldier's Properties

- All soldiers are the same; there are no ranks or differences in behaviour of any kind.
- They belong to exactly one out of three nations (red, green or blue), and wear its colour.
- A soldier can move to an adjacent field every day.
- All soldiers of one nation have the same lifecycle.
- The lifecycle consists of three phases:
 - o Young (infertile) age
 - o Adult (fertile) age
 - o Old (infertile) age.
- Lifecycle phases are visualized by colour shading from light (young) to dark (old).
- If end-of-life age is reached soldiers die and are removed from the game.
- If a soldier of adult age has direct contact to exact one other soldier of adult age and with no enemy contact, a new soldier is produced with the probability of the respective nation's reproduction rate.
- Normal ageing rate of a soldier is one day per day (no joke).
- Ageing may be increased by these factors:
 - o Enemy contact. The number of neighbouring enemies multiplied by a configurable factor in days is added to the soldier's age. This is how *killing in action* works: Soldiers age rapidly beyond their lifespan when exposed to enemies.
 - o Water contact. The number of neighbouring fields with water multiplied by a configurable factor in days is added to the soldier's age if the soldier is in water himself. This means on the other hand that soldiers surrounded by other fellow soldiers can cross e.g. a river with less impact on their lives. This is meant to simulate the building of military bridges.
 - o Overcrowding. If the number of fellow soldiers is higher than a configurable value the soldier ages at two days per day. This is supposed to reduce the build-up of massive and immobile troop clusters.
- Soldiers always grow older. There is no "healing".

5.2 King's Properties

- Kings are only available if castles are activated as part of the game.
- Kings belong to exactly one out of three nations (red, green or blue), and wear its colour.
- A king is always located in the centre of a castle. He cannot move.
- Kings of main castles are called great kings.
- Kings of auxiliary castles are called minor kings.
- When kings die their nation's reproduction rate is declined according to their importance which is directly related to the size of their castles. The impact on the reproduction rate is configurable, see 9.3.
- A king's lifecycle equals to the soldier's lifecycle of his respective nation, multiplied by two.
- Kings are initially at the youngest fertile age.
- Kings do not age if they are not exposed to enemy troops.
- If kings are older than the youngest fertile age they grow *younger* at a rate of one day per day, giving them the unique ability to recover from injuries.
- Their lifecycle consists of two phases:
 - o Adult (fertile) age
 - o Old (infertile) age.
- Lifecycle phases are visualized by colour shading from medium (adult) to dark (old).
- Kings of fertile age can produce soldiers all by themselves with the probability of the respective nation's reproduction rate. They love to be left alone when reproducing, otherwise they *can't*.
- If end-of-life age is reached kings die and are removed from the game.
- A king ages by the number of neighbouring enemies multiplied by a configurable factor in days.
- A king strikes twice as hard as an ordinary soldier does: adjacent enemies age as if they were exposed to two opposing soldiers.
- If a king got killed but his troops managed to hold the fortress against the enemy, a new king will be crowned after a configurable number of days.
- Kings are marked by a '⌘'-sign in their cell.

6 Main Screen

After loading into EXCEL, *Knight & Lansquenet* comes up with the main screen which basically does not change throughout the game.

The main screen is divided into three areas, of which the eye-catching battlefield in the lower part of course is the most important one. In the upper part is the statistic area which gives an overview of the current status of all nations, like the number of active individuals, the share of the current total population in per cent, and the reproduction rate. A history diagram shows how the fighting nations did in comparison to each other.

Under the history diagram the news scroll is located which provides reports of the latest events like castles that have been conquered or nations that have been defeated. After the battle is over, you can click on the news scroll to enable a scroll bar that allows inspection of all previous reports.

All actions are controlled from window “Command post” which is popped up by pressing the [Enter command post] button.

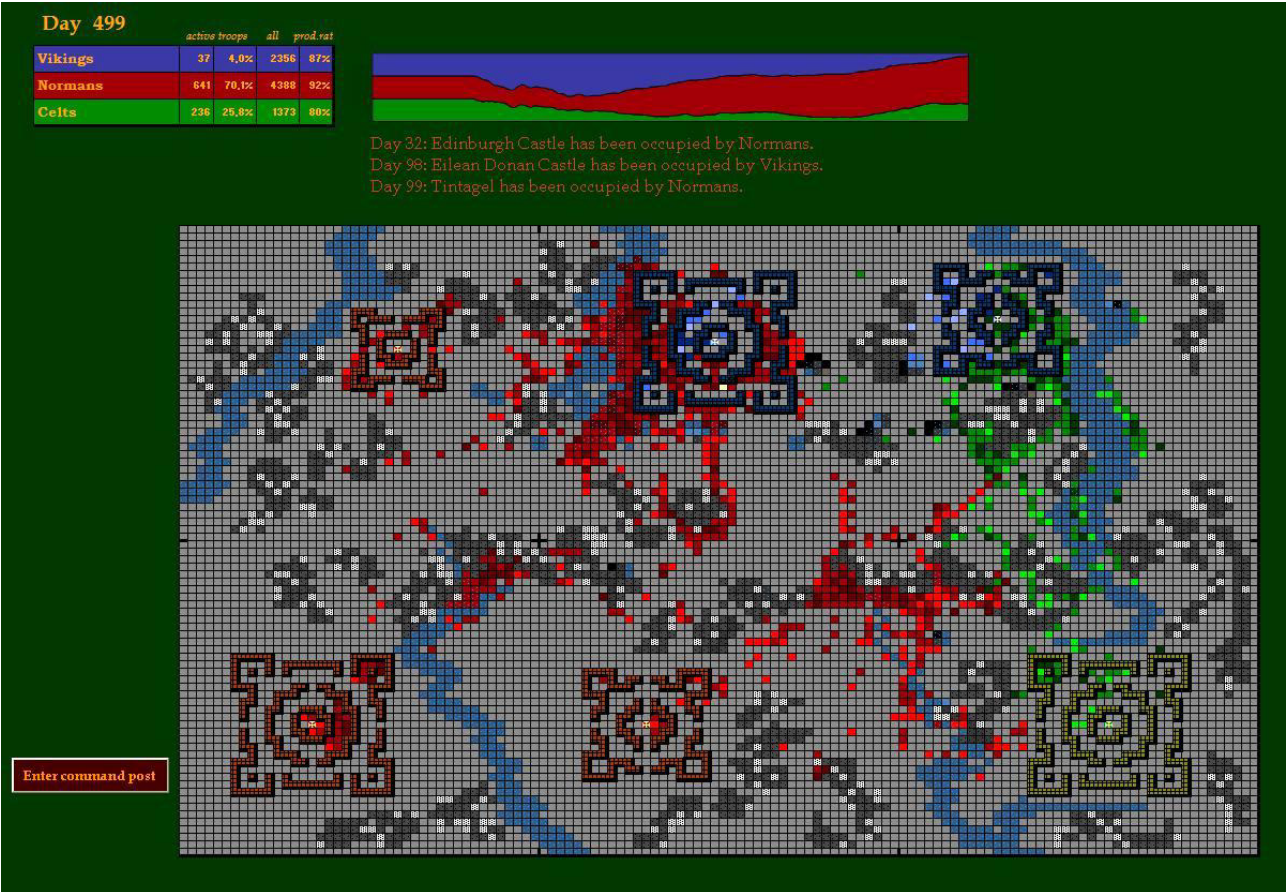


Figure 3. Main screen – Viking castles under deadly attack

6.1 Battle Area

The battle area is a dynamic map display showing the battleground with static features like mountains, rivers and castles, while the troops of all nations are moving around.

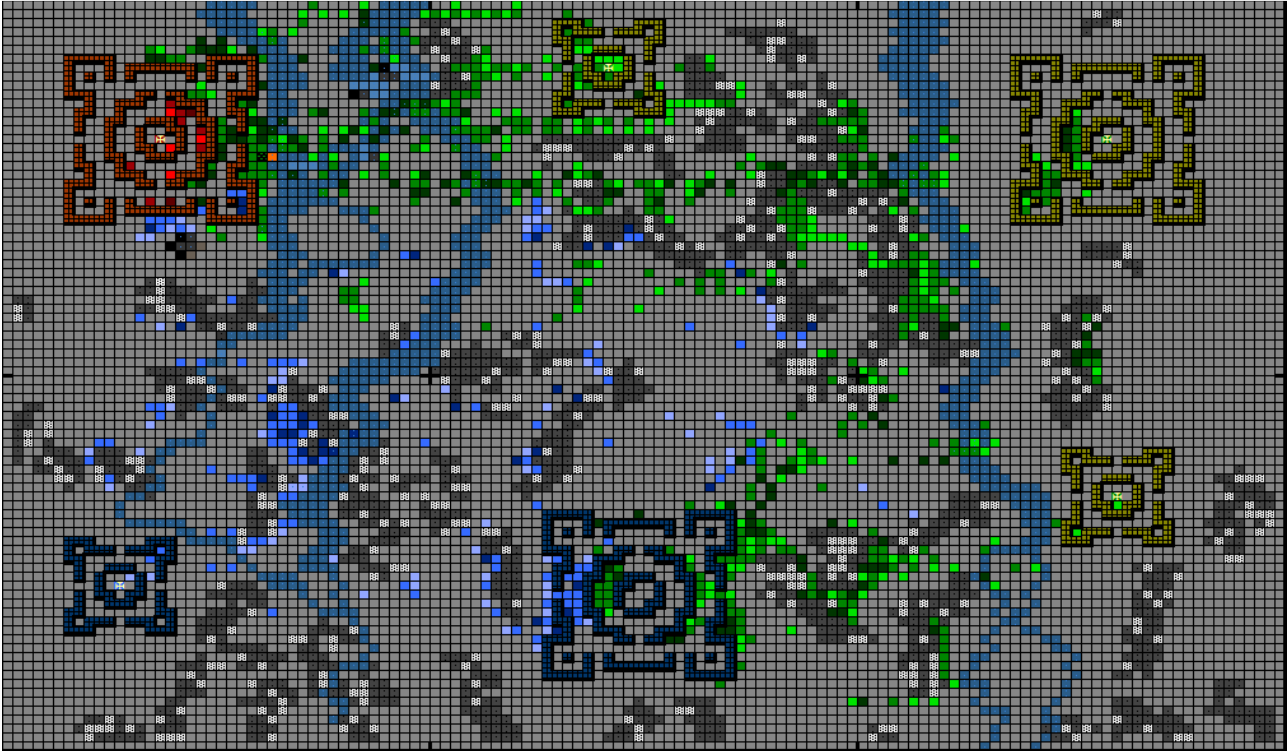


Figure 4. Battle area – Celts going for victory

6.2 Statistic area

The statistic area provides current information for all nations:

- Nation's name with number of active troops (soldiers and kings), as absolute numbers and as percentage of all nations.
- Number of a nation's troops - current and all that ever lived.
- Reproduction rate of the nation.

Annihilated nations are greyed out and marked with a '☠' symbol.

In the upper left corner the current day (=update cycle) is displayed.

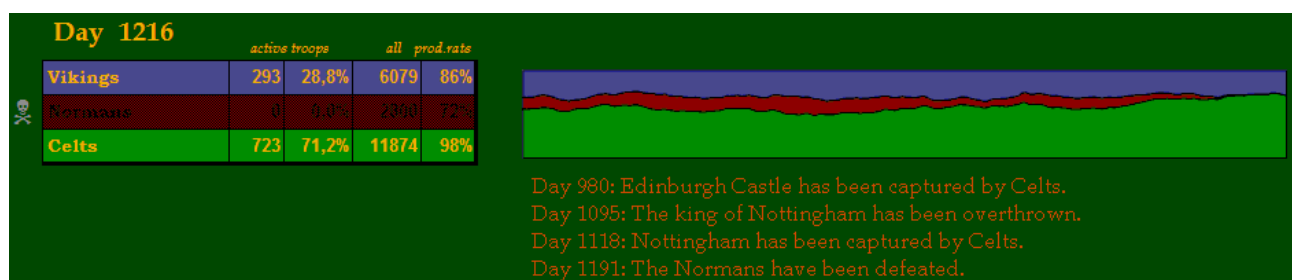


Figure 5. Statistics area and news scroll – sorry for the Normans

7 Battle Modes and Commands

As mentioned earlier, *Knight & Lansquenet* is a game running automatically all by itself, but it allows the player to take over command of any nation involved. The commanded nation can be switched at any time in mid-battle. Commands previously given to other nations remain in force. The battlefield is divided into six square areas, 2 rows and three columns, the so-called *battle zones*. Manually given commands are always addressing one or more battle zones. All available modes may be manually commanded but not all are used in automatic game. Within a battle zone troop movements are always automatically controlled, but dependent on the active command.

7.1 Standard Attack Mode

By default, the *standard attack mode* is active. This mode is sufficient to carry a nation through an entire battle, with attack and retreat movements as well as marches towards enemy hotspots. The following factors are taken into account for developing local and global strategies:

- Settings of “attacking” (=adversary) parameter
- Local and global strength relations
- A nation’s current bravery value.

This mode’s command button symbol is ‘’.

7.2 Castle Attack/Defence Mode

This mode is only available for battle zones which hold a castle. If active, the nation tries to gain control of the castle, either by attacking or defending, depending on whether it is the current owner or not.

This mode’s command button symbol is ‘’.

7.3 March Mode

The *march mode* allows to force troops to move in a specific direction. All soldiers in the battle zone which have at least one fellow soldier in an adjacent field will move in the commanded direction. This is useful to direct troops towards the enemy or to circumvent obstacles. Be aware that using march mode in one direction too long can have a negative effect on troop reproduction. By using march mode in more than one battle zone and with different directions, a human player can create complex manoeuvres that are hard to counter for the automatically controlled nations which do not have this mode at their disposal.

March mode’s command button symbol is an arrow ‘’ (example), corresponding to the commanded direction.

8 Window “Command post”

This window provides all means to control the game as a whole and a selected nation in particular. It has four main areas.

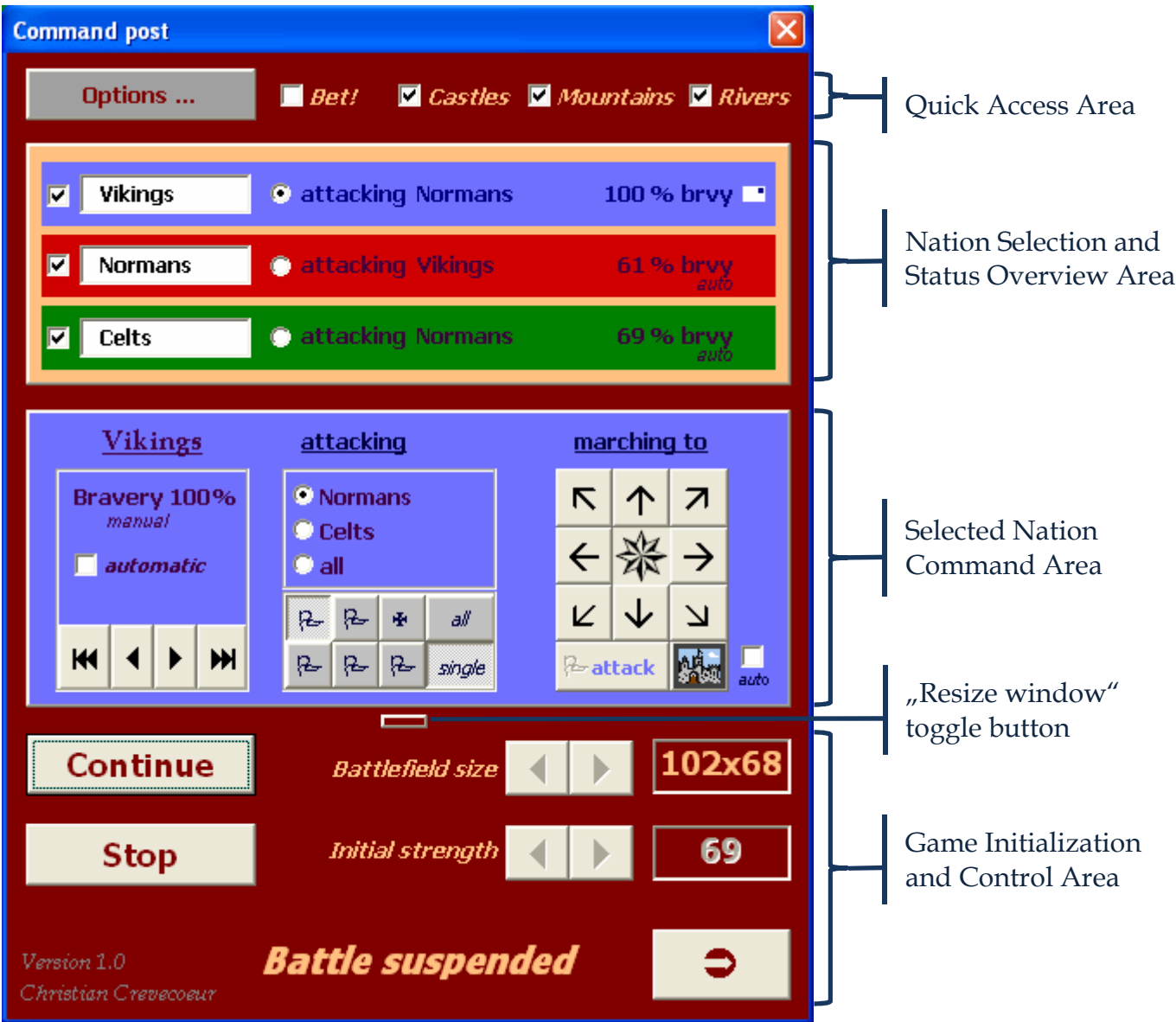


Figure 6. Window “Command post”

8.1 Quick Access Area

This area holds checkboxes which allow quickly activation or deactivation of more complex features which behaviour can be adjusted by parameters configurable in the "Game options" window.

Field	Value range	Description
[Options ...]	button	Opens window "Game options" which allows configuration of all game parameters.
☐ Bet!	true or false	Activates betting mode, detailed options in window "options".
☐ Castles ☐ Mountains ☐ Rivers	true or false	(De)activates castles, mountains, or rivers in any combination, detailed options in window "options".

8.2 Nation Selection and Status Overview Area

This area gives information over the nations engaged in battle. You may:

- edit nation's names in the textboxes
- select whether a nation takes part in the game or not. You can check any combination of two checkboxes or all three.

Select the nation you wish to command by pressing a radio button (right of the text boxes). By doing so the *selected nation command area's* colour will turn into the colour of the selected nation. In the example above the Vikings have been selected, so the colour turned blue. The following information is provided:

Field	Value range	Description
attacking	"all" or <other_nation>	Determines which nation(s) will be targeted. "All" causes a nation to attack all other nations. If one nation is selected for attack, the other one will be spared. However, if troops of the spared nation come across by coincidence, they will be fought as well. <i>Output only.</i>
brvy	0..100%	Indicator of how brave a nation will behave. The bravery value is either entered manually in <i>selected nation command area</i> or automatically derived from the population percentage. <i>Output only.</i>
auto bravery indicator	"auto" or ""	Indicates whether the bravery is calculated automatically or not. <i>Output only.</i>
battle zone with active command indicator	Dark blue square(s) in white rectangle  or ""	Shows battle zones with active commands other than default attack mode. Commands can be either "march to <direction>" or "castle attack/defence". The active commands for a nation are indicated by black squares in a white rectangle, at the position of the respective battle zones.

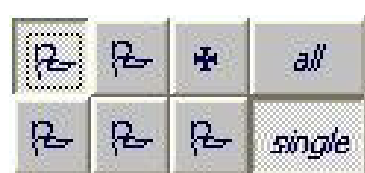
Field	Value range	Description
		Example in figure 5: Vikings have an active “castle attack/defence” command in the upper right battle zone. <i>Output only.</i>

8.3 Selected Nation Command Area

Here commands can be entered for the nation selected in *nation selection and status overview area*.

Field	Value range	Description
Bravery	0..100% in steps of 10%	Indicator of how brave a nation shall behave. Use the forward/backward buttons to make your choice. 50% means a nation will attack if the enemy is not stronger than themselves. At 100% a nation will always attack.
☐ automatic	true or false	Indicates whether the bravery is automatically calculated or manually entered.
attacking	“all” or <other_nation>	Determines which nation(s) will be targeted by the selected nation. “All” causes the nation to attack all other nations. If one nation is selected for attack, the other one will be spared. If only two nations are (still) in combat, this field is automatically set to the other nation.

8.3.1 Battle Zone Selection Buttons



This button either selects or deselects all six battle zone toggle buttons.

If this toggle button is activated, pressing one battle zone toggle button will automatically deselect all others. If not activated, multiple selection of battle zone buttons is possible.

Six battle zone toggle buttons, corresponding to the six zones of the battlefield. Commands apply to all battle zones marked by a pressed button. The currently active commands are depicted by these symbols:

☞ = standard attack mode

⊠ = castle attack/defence mode

↗ = march in direction of arrow (8 directions)

Figure 7. Battle zone selection buttons

8.3.2 Battle Mode Command Buttons

These buttons define the command mode for the current battle zone selection. All buttons form one radio button group, which means that just one of them can be selected at a time. Button selection is indicated by the button fore colour set to the colour of the controlled nation.

In the example the *standard attack mode* button is selected, depicted by the blue fore colour. Commands are given by utilising the *battle zone selection* and *battle mode command* buttons in turn. If a *battle mode command* button is selected, the respective battle mode will be immediately applied to a battle zone on selection. Press a selected *battle mode command* button again to deselect if you prefer to select the battle zone(s) first.

The best thing to do is trying out to see how it works.

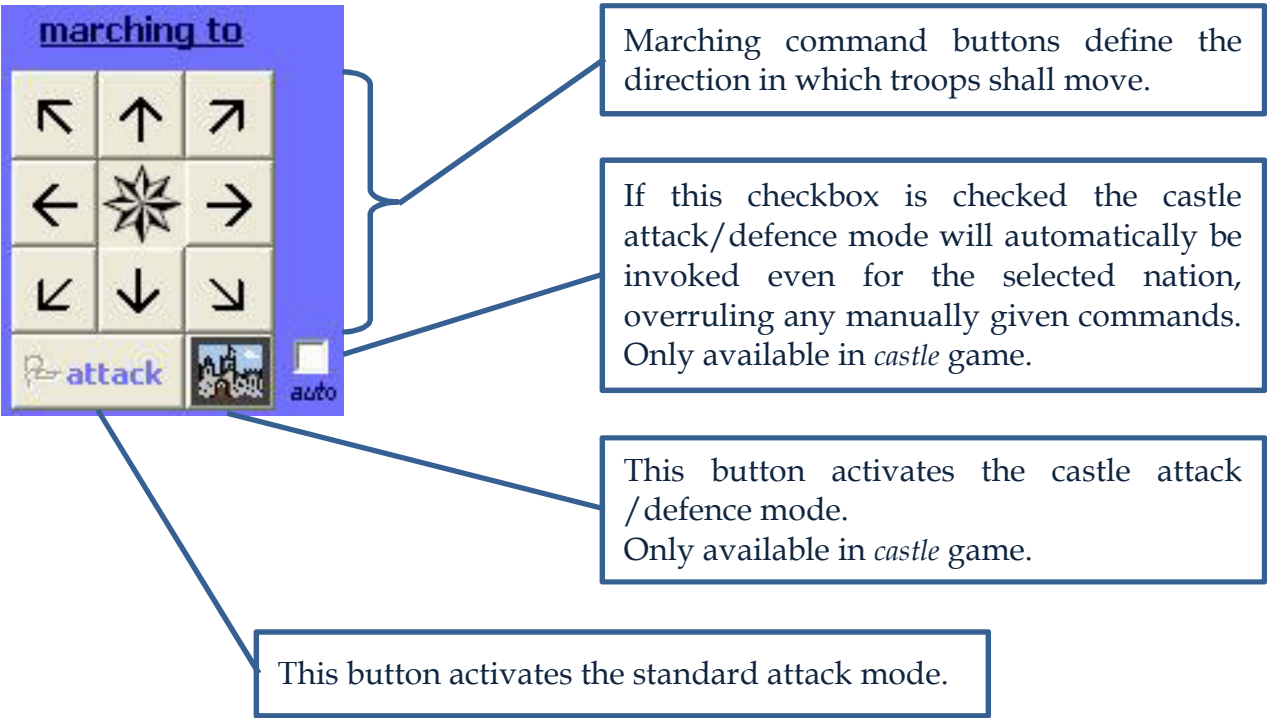


Figure 8. Battle mode command buttons

8.4 Game Initialization and Control Area

This area controls and reflects the game status. After preparation a game is started, afterwards it may be paused, resumed, and stopped. Also the battlefield size and initial population can be entered.

Field	Value range	Description
[Start] <i>or</i> [Pause] <i>or</i> [Continue]	button	This button's caption changes according to the current game mode: [Start] starts the battle when in mode <i>Preparation</i> . [Pause] suspends the battle when in mode <i>Battle rages</i> . [Continue] resumes the battle when in mode <i>Battle suspended</i> .
[Stop]	button	Stops the current game and returns to mode <i>Preparation</i> . The current game cannot be resumed afterwards.
[☞]	button	Closes the window. If it has not been stopped before, the current game can be resumed after opening window "Command post" again. Save the application before closing if you wish to resume the battle later.
battlefield size	42x28, 54x36, 66x44, 78x52, 90x60, 102x68, 114x76, 128x84	Selects the size of the battlefield from 8 possible choices.
Initial strength	2..105	The number of soldiers per nation initially created. The actual value range depends on the selected battlefield size. This parameter is only valid for no-castles game.

8.5 Resizing Window(s)

On pressing the "resize window" button the window part "game initialization and control area" is alternately folded and unfolded. This helps if the window obscures the view on the battlefield if you have too little screen space. The same effect can be obtained by pressing the [z] key, which toggles between the reduced window size and minimized. The [x] key however toggles between minimized and full size. Both keys also toggle the size of window "Betting office" (see 10) ,between full size and minimized.

9 Window “Game options”

9.1 Tab “Global settings”

This page contains miscellaneous settings regarding display properties, history diagram appearance, automatic bravery calculation, and betting.



Figure 9. Window “Game options” – Tab “Global settings”

Field	Value range	Description
☐ battle zone markings	true or false	Toggles white markings of battle zone borders on or off.
automatic bravery base value	-30..50 in steps of 5	This value is added to the calculated automatic bravery value.
automatic bravery/ strength ratio	50..200% in steps of 10%	Ratio between % relative strength of a nation and the automatic bravery value. At 100%, +/- 1% strength change results in +/- 1% bravery change.
minimum day length	0.1..2.0 s	Minimum duration of a day; slows down rate of screen update when load is low.

Field	Value range	Description
days between diagram data points	1..30 days	Update rate of history diagram. Every <x> days the diagram is shifted by one data point.
☐ show history diagram	true or false	Turns display of history diagram on or off.
☐ show news scroll	true or false	Turns display of news scroll on or off.
☐ use sounds	true or false	Turns sounds on or off.
☐ resize windows automatically	true or false	If activated, window "Betting office" will be minimized automatically when battle continues. Window "Command post" will be reduced by window part "Game Initialization and Control Area" when battle starts. See 8.5 for further details on resizing of windows.
☐ use betting	true or false	Turns betting mode on or off. Corresponds to checkbox <i>Bet!</i> in "Command post" window.
battlefield coverage	2..9%	Portion of battlefield that needs to be covered by troops in order to open window "Betting office".

9.2 Tab “Parameters”

This page holds lifecycle and ageing parameters of nations as well as artillery parameters.

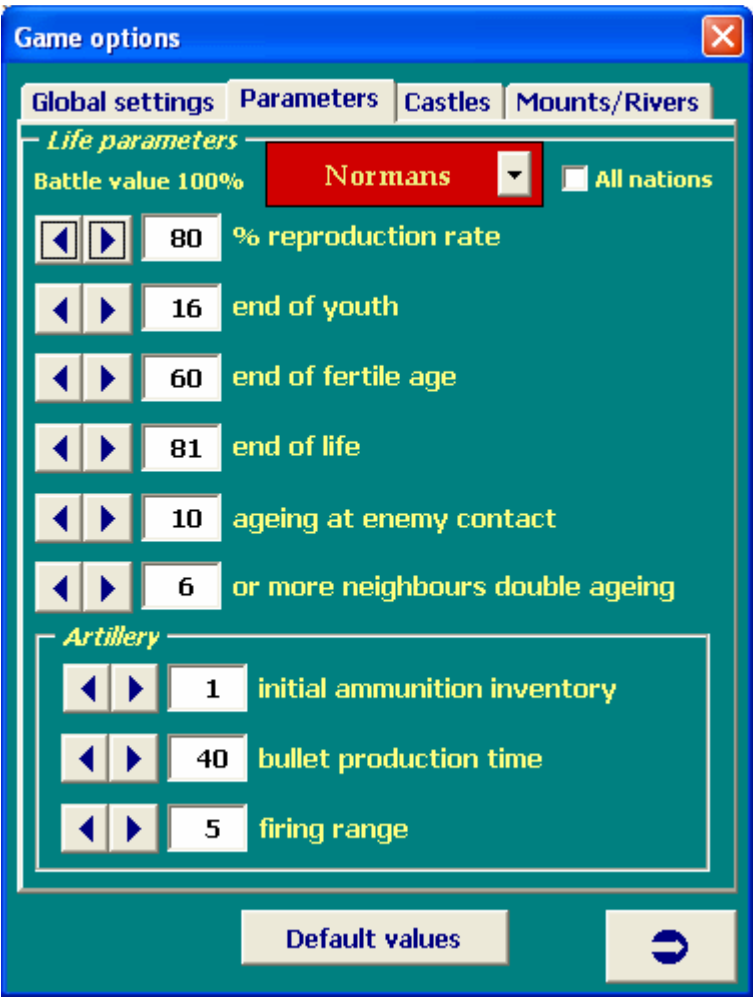


Figure 10. Window “Game options” – Tab “Parameters”

Field	Value range	Description
Battle value	0..470%	Calculated battle value relative to default settings, facilitating comparison between different nation setups. Output only.
{nation}	{red_nation} or {green_nation} or {blue_nation}	Selection of nation to which life parameters shall apply.
☐ all nations	true or false	Entered life parameters apply to all nations if checked.
reproduction rate	20..100%	Probability of creation of a new individual if all other prerequisites are met.

Field	Value range	Description
end of youth	5..100 days	Individuals cannot reproduce themselves until beyond this age.
end of fertile age	10..200 days	Reaching this age, individuals cannot reproduce anymore.
end of life	15..200 days	At this age individuals die and are removed.
ageing at enemy contact	2..100	Individuals adjacent to enemies age <value> * number of enemies per turn.
or more neighbours double ageing	1..9	With <value> or more neighbours an individual ages at double speed (reduces cluster build-up). "9" turns function off.
initial ammunition inventory	0..99 bullets	Number of bullets every castle initially receives.
bullet production time	20..99 days	Time a castle needs to produce one additional bullet.
firing range	1..10	Average firing range (1=short -10=long).
[Default values]	button	Resets all parameters on this page to factory defaults.

9.3 Tab “Castles”

This page contains parameters regarding castle game.

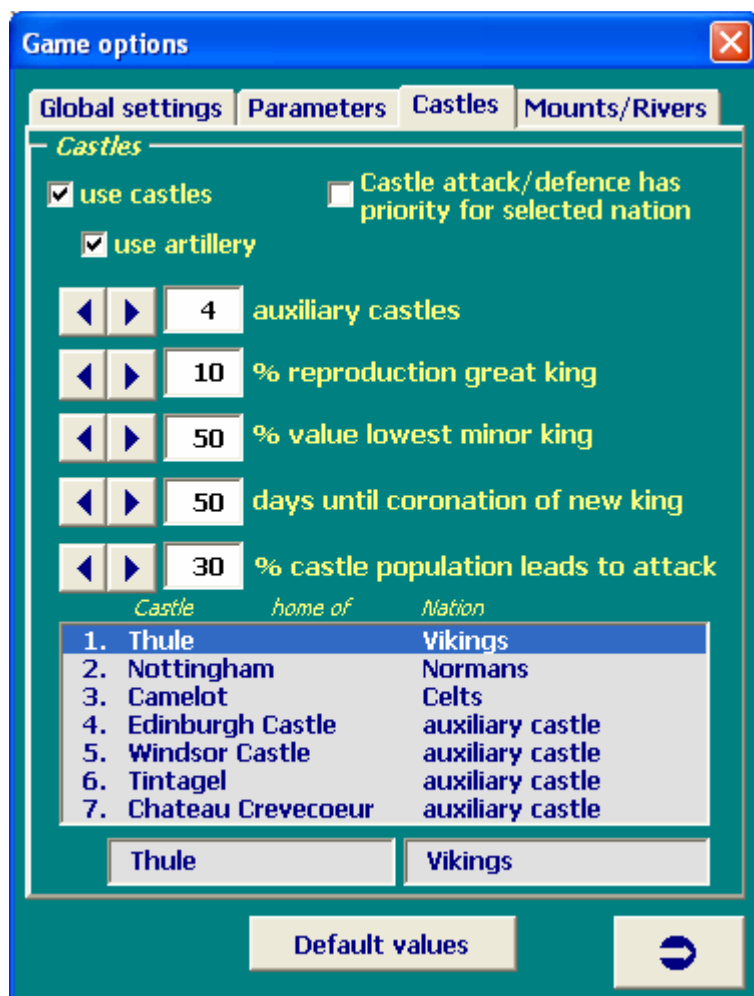


Figure 11. Window “Game options” – Tab “Castles”

Field	Value range	Description
☐ use castles	true or false	Turns use of castles on or off. Corresponds to checkbox <i>Castles</i> in “Command post” window.
☐ Castle attack/defence has priority for selected nation	true or false	Activates castle attack/defence mode automatically also for nation selected for command input in “Command post” window. Corresponds to checkbox <i>auto</i> in “Command post” window.
☐ use artillery	true or false	Turns use of artillery for castle defence on or off.
auxiliary castles	0..4	Number of the smaller and initially unoccupied fortresses. "4" is only valid if only 2 nations have been chosen.

Field	Value range	Description
reproduction great king	0..30%	Reproduction rate of a nation is changed by this value if its great king is lost or reinstalled.
value lowest minor king	0..100%	Influence of lowest minor king on reproduction rate in relation to great king.
days until coronation of new king	1..200 days	Timespan until a king is reinstalled after being killed if the castle itself has not been lost.
Castle population leads to attack	5..75% in steps of 5%	Share of a castle's population that must be reached by a nation to automatically activate castle attack mode.
Castle .. home of .. nation	<castle_name> <nation_name>	Change castle and nation names. Nation names can only be edited for main castles.
[Default values]	button	Resets all parameters on this page to factory defaults.

9.4 Tab “Mounts/Rivers”

This page contains parameters regarding mountains and rivers.

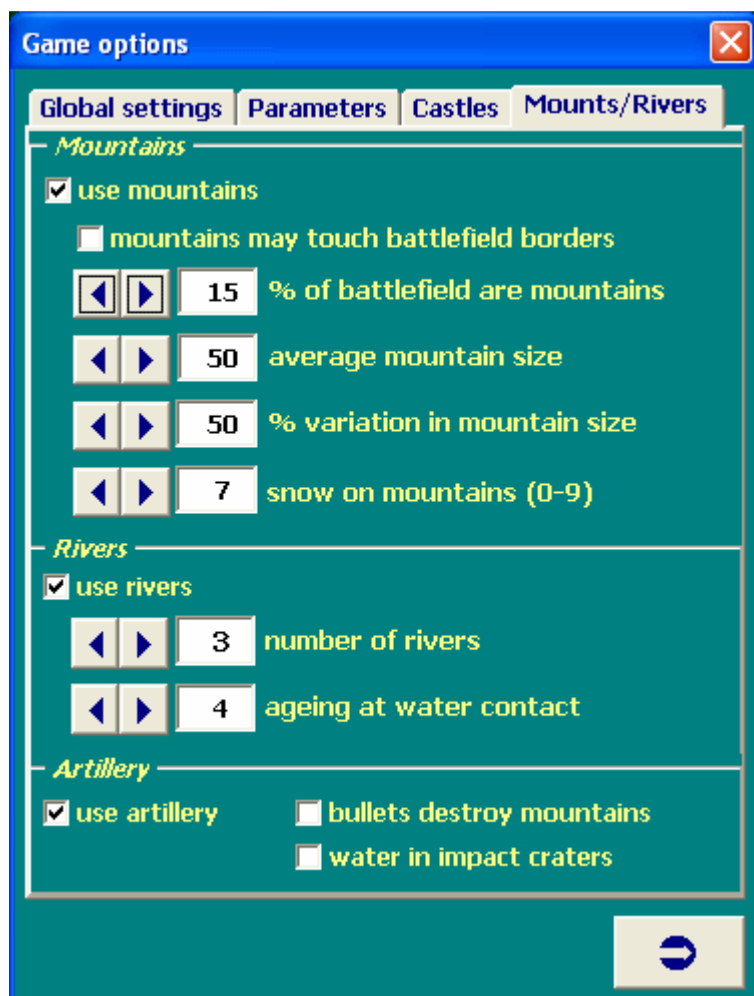


Figure 12. Window “Game options” – Tab “Mounts/Rivers”

Field	Value range	Description
☐ use mountains	true or false	Turns use of mountains on or off. Corresponds to checkbox <i>Mountains</i> in “Command post” window.
☐ mountains may touch battlefield borders	true or false	Allows mountains to attach directly to the battlefield borders when checked. This is not recommended because it promotes jamming of troops.
of battlefield are mountains	1..30%	Portion of battlefield covered with mountains. Be careful with values >20%.
average mountain size	3..200 in steps of 5%	Number of fields an average mountain consists of. Values >50 may make troops getting stuck.
variation in mountain size	0..80 in steps of 5%	Magnitude of variation from average size. Big values produce great variety of mountain sizes.

Field	Value range	Description
snow on mountains	0..9	Displays snow on mountains from 0 (none) to 9 (much). Snow has no effect on the game.
☐ use rivers	true <i>or</i> false	Turns use of rivers on or off. Corresponds to checkbox <i>Rivers</i> in “Command post” window.
Number of rivers	1..8	Number of rivers to be generated in scenery.
ageing at water contact	1..8	Individuals adjacent to water age <value> * adjacent_water per turn if they are in water themselves. Large values make rivers hard to cross and can make troops get stuck.
☐ use artillery	true <i>or</i> false	Turns use of artillery for castle defence on or off.
☐ bullets destroy mountains	true <i>or</i> false	If checked mountain fields covered by impact craters are permanently removed.
☐ water in artillery impact craters	true <i>or</i> false	Craters created at the impact of catapult bullets are filled with water. These puddles will remain until the end of the battle.

10 Bet! mode

If you activated the bet mode, the battle starts as usual. The only clue that something special is going on is the fact that window “Command post” is iconified. This is because manual commands are not allowed in bet mode for obvious reasons. Also all nations’ chances are equalized by setting the life parameters of all nations to those defined for the blue nation, and the *adversaries* setting to “all”. After a short while nations have developed so far that they cover a predefined percentage of the battlefield. The battle is suspended and window “Betting office” pops up in phase 1 *Place your bets*, allowing you to, well, place your bets.

Sometimes this does not happen and a message window appears informing you about the fact that one nation has already perished and for that reason betting will not be possible anymore. You can choose to resume the battle without betting or to cancel for a new try.

10.1 Window “Betting office” - Phase 1 *Place your bets*

Your task now is to evaluate the tactical situation and estimate which nation is going to win the battle and which one is going to be in second place. To make this more fun, two players can compete with each other in the contest. If you are player 1, enter your name in

Bank		Player1		Player2	
Bank	10191,00				
Vikings		1st	2nd	1st	2nd
Normans		☐	☐	☐	☐
Celts		☐	☐	☐	☐
credit:		10,93		8,07	
odds:		2,3		2,5	
wager:		5,00		5,00	
result:					
continue		Place your bets		↻	

field *Player1*, then select in the left column of radio buttons the nation you find looks healthy enough to win, and then do the same for the nation to be the vice-winner in the column marked *2nd*. Field *odds* shows the calculated odds of the currently chosen combination, judged from the nation’s current strength relations. This value is multiplied with the wager you entered in field *wager* in case of a complete win in all

Figure 13. Window “Betting office” – Mode “Place your bets”

categories. This means that the more you dare the more money you can make – against the increasing odds. You may change your credit anytime, as well as the Bank’s balance. If all competitors placed their bets press [continue] to proceed in bet mode or [↻] to resume the battle without betting. The battle is automatically continued until only one nation is left. Then window “Betting office” enters phase 2 *Battle completed*.

10.2 Window "Betting office" - Phase 2 *Battle completed*

At the right of the nation's names their final standings are displayed. In the example the Vikings won, the Celts were second, and the Normans lost. The guesses of the players are commented by smileys. A ☺ indicates that the place of the respective nation was exactly matched. An indifferent ☹ means that a nation that was supposed to win came in second, causing the prize to be reduced. Any other mismatch is commented with a ☹.

The prize money is calculated as follows:

$$\text{wager} * \text{odds} * \text{prize_factor}$$

where *prize_factor* is the sum of these components:

- 0.6 if 1st place was correctly predicted ☺
- 0.3 if 2nd place was correctly predicted ☺
- 0.1 if 3rd place was correctly predicted ☺
- 0.1 if predicted 1st place came in 2nd ☹



In the example this means for Player1:

$$5,00 * 2,3 * 0,6 = 6,90$$

and for Player2:

$$5,00 * 2,5 * 0,2 = 2,50$$

The calculated prize money is displayed in the *result* fields.

Figure 14. Window "Betting office" - Mode "Battle completed"

Press [➡] to proceed to phase 3 *Final result*.

10.3 Window “Betting office” - Phase 3 *Final result*

The previously displayed preliminary prize money values are adjusted by subtraction of the wager values. The resulting clear profit is either positive or negative. Credits are updated with the resulting values. With profit distribution the bank balance is updated accordingly, including the bank’s clear profit.

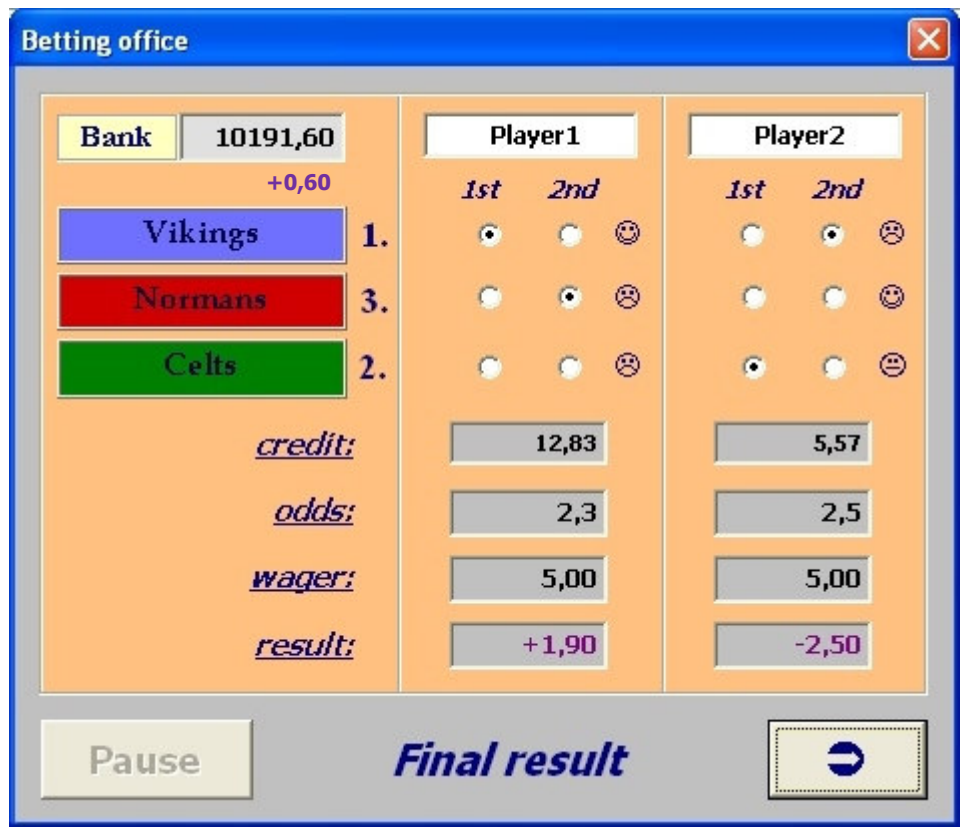


Figure 15. Window “Betting office” – Mode “Final result”

Press [↺] to return to window “Command post” for a new attempt.

Remember: The bank always wins in the end...