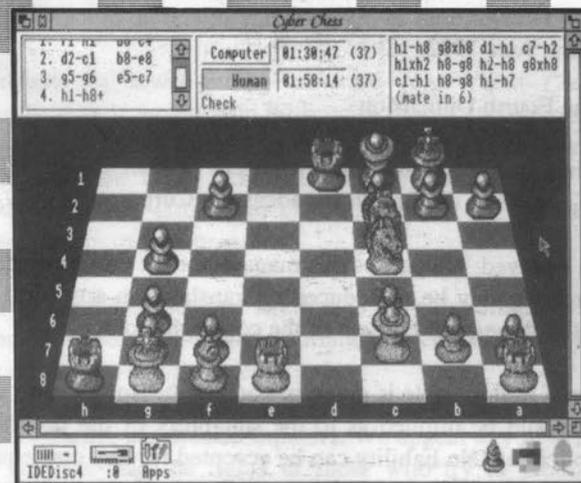


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Warning

# Cyber Chess



## Owner's Manual

William Tunstall-Pedoe  
The Fourth Dimension



First Edition: June 1992.

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The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU  
Tel. (0742) 700661 or 769950

## Warning

It is important that you understand exactly what you can and cannot do as far as copying this software is concerned.

Most importantly breaking the software protection and/or distributing copies to other people is not only highly illegal (penalty: up to two years imprisonment) but deprives those who gave immense amounts of their time developing and marketing this program of their income.

It also results in lower-quality software (e.g. *Cyber Chess* has no interactive help as it would help those with illegal copies more than the manual-owning legal owners), higher-prices (as sales are lower) and can stop some software being economic at all resulting in it not being developed. Time and effort also goes into protection which could be better spent improving the program.

If you have a site licence then again it is very important you read and understand the conditions. Most importantly no copies should leave or be used outside the site that the licence is for.

Acorn machines are excellent computers. We appeal to you to respect not only the law but also the rights of those who try to produce quality software for the relatively small Archimedes market.

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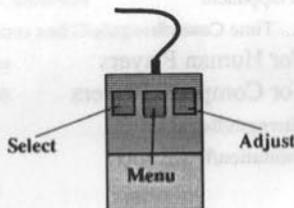
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# About this Manual

## Conventions

### Mouse Buttons



This manual uses the standard Acorn names for the mouse buttons. The left button being referred to as **Select**; the right button as **Adjust** and the middle button as **Menu**. If no button is specified then **Select** should be assumed.

### Keyboard Characters

When a key on the keyboard is specified *italics* are used.

### Menu Options and Dialogue Icons

**Bold type** is used when specifying items from a menu and text icons in dialogue boxes. e.g. **New game**, **Coords**.

### Archimedes

Whenever the term 'Archimedes' is used, the BBC A3000, the A5000 and any future compatible computer is also included.

## Assumptions

In order to read this guide it is assumed that you:

- Know how to use the RISC OS desktop. If not, please refer to the documentation supplied with your machine or RISC OS. e.g. Acorn's excellent 'Welcome Guide'.
- Have a working knowledge of chess and algebraic notation. If not, read the tutorial supplied with this software package.

## One Page Summary

This page summarises all you need to know to get the program to play a simple game with you. Thus, you should be able to start using the program without having to spend a long time reading first. When you want to learn more, the rest of this manual is here for you to read. All the information on this page is repeated in greater detail later along with a description of all of *Cyber Chess's* more advanced features.

To run the program insert the *Cyber Chess* disc in the drive, click on the drive icon and then double click on the !CyChess application. The program will install on the icon bar. To open a game click **Select** on the icon bar icon.

If the disc is new the game will be opened using the program's factory settings. You are playing the white (grey) pieces nearest you and the computer is playing black (gold).

Pieces are moved by *dragging* them to their new squares. Castling is done by moving the king, the rook then moves automatically. If you promote a pawn you will be prompted for a choice of promotion piece.

To decide which side plays which colour, press **menu** over the window and select **General...** from the Options menu. This dialogue box will also enable you to set the orientation of the board and decide whether the board is shown in 3D or 2D.

When you have decided what colour the computer is playing you can make it easy to defeat by setting it to a beginner level. To do this select **Black Player...** if the computer is playing black or **White Player...** otherwise from the options menu and scroll the inside dialogue box down a bit to the section entitled 'Play'. Click **Select** on **Beginner** and enter a number between 0 (very weak) and 99 (reasonably competent). Then click on **OK**. The program will continue to play at this standard until you select **Full Strength** again later.

# 1. Introduction

*Cyber Chess* was developed with the following aims:

- To appeal to all standards of chess ability: If you are a complete novice then the enclosed tutorial should teach you chess from scratch. Beginners can play the computer in any of a hundred beginner levels the lowest of which are almost unlosable to. Stronger players can obtain detailed analysis of positions they set up; get the computer to play their favourite openings and can use many of *Cyber Chess's* other advanced features.
  - To be excellent on the base machine and yet to provide enhanced facilities for users with upgraded machines: The graphics are optimised for a mode 12/ARM2 machine. An ARM3 will make the animation smoother and improve the 'full strength' playing standard and users with extra RAM can allocate large chunks of it to *Cyber Chess* to improve its chess strength. Support for RISC OS 3 is provided including desktop saves.
  - The third aim was to make full use of the powerful features of RISC OS in the desktop. *Cyber Chess* never takes over the entire machine and is fully RISC OS compliant.
- Unlike most applications it is also multi-windowed. You can play as many matches as you want within available RAM simply by opening a new window containing a new game. A unique internal scheduling algorithm allows *Cyber Chess* to drive all the games and computer players simultaneously whilst still multi-tasking with other applications.
- To be comparable in features with the best chess software for any micro computer. To our knowledge many of its facilities are unique to the Archimedes.
  - Finally, to follow the highest possible standards of software quality.

In short, to be the definitive chess-playing program for RISC OS machines. We hope that you will have many hours of enjoyment using and playing it.

# 2. Using *Cyber Chess*

## 2.1 Installation

*Cyber Chess* is supplied on the enclosed floppy disc. This disc is your master copy of the application and should be write protected and kept safe. In the unlikely event that it develops a fault, a replacement can be obtained from the Fourth Dimension.

The program can be run directly from this disc or it can be installed on your hard disc if you have one. Installing on hard disc is simply a matter of dragging the application onto the appropriate filer window.

*Cyber Chess* needs version 3.75 or later of the Shared C Library (CLib) to run. This is the module supplied within the !System directory on the master floppy disc. To facilitate updating your main !System the application SysMerge is also provided.



To use this program double click on the SysMerge application. A dialogue box similar to the one shown above will appear. Make your main !System directory appear in a filer window and then drag it onto the SysMerge window. The first line entitled 'Master !System' will then be filled in. Finally drag the !System folder off the *Cyber Chess* disc onto the window. The program will copy the module across if necessary and give you the message "Update complete". You are now ready to begin.

## 2.2 Running *Cyber Chess*

Double click on the !CyChess application in the filer window. It will install on the icon bar and open a copyright warning window. This window will close automatically a few seconds later. You do not need to wait for it to close before proceeding.

If you have a single-user version and are running the application from hard disc the software will require you to insert the master disc briefly into the drive before installing itself on the icon bar.

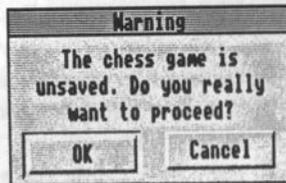
*Cyber Chess* can be run in any desktop mode but the animation is smoother in 16 colour modes such as mode 12. There is no advantage to running the program in a 256 colour mode such as mode 15.

A game is opened by clicking **Select** on the icon bar icon. Any number of windows, each containing a new chess game, can be opened from one incarnation of the application up to the available RAM by continually clicking on this icon. You cannot run *Cyber Chess* more than once.

## 2.3 Basic Ideas

### 2.3.1 Games

A game is defined within a single window. The menu driven commands apply only to the game over which the **menu** button was pressed. The opening of a new window implies the creation of a new game and the closing of a window removes the game which it contains.



Whenever an action will result in the loss of unsaved moves a warning will be issued before it actually happens. Such actions include closing a window, quitting the application or shutting down the computer with a *shift-F12* under RISC OS 3. You will then need an additional mouse

action (Clicking on **OK**) to proceed. **Cancel** aborts allowing you to save the game first.

### 2.3.2 3d/2d Display

One of the main features of *Cyber Chess* is that it has two formats for representing the position.

The first is a three-dimensional (3d) simulation of the game. This is designed to look as close as possible to how playing a real game on a real chess-board would look. A great deal of effort has gone into making the representation as clear and lifelike as possible.

The second representation is an overhead, two-dimensional (2d) view. This has the advantage that it is extremely clear but it lacks some of the realism of the 3d view.

In both displays the 'white' pieces are light grey and the 'black' pieces are gold. It did not prove possible to create clearly distinguishable black and white pieces that looked good within the default 16-colour desktop palette so this colour scheme was adopted as an alternative.

### 2.3.3 The Mouse Pointer

When running *Cyber Chess* the shape of the mouse pointer gives extra information in certain contexts:



- When a piece is grabbed the pointer is changed to a hand. This indicates that a piece is being held and can be dragged around the board.



- This indicates that clicking on any mouse button will generate a menu.



- This indicates that the pointer is above a writable icon. Click with **Select** and you can type into it.

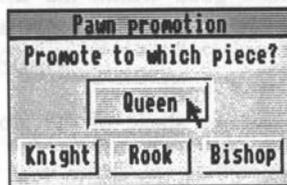
### 2.3.4 Moving Pieces

Pieces are moved by *dragging* a piece using **Select** to its new square. In the 3d display the new square is the one nearest the base of the piece when you let go. (i.e. the square you put it down on). If you are capturing a piece then the captured piece will slide off the board into the piece box when you place your piece on top of it.

To castle you simply move the king to its castling square and the rook will move automatically.

To capture *en passant* simply move the capturing pawn to its correct destination square and the captured piece will slide off the board.

To promote a pawn simply push it to its promotion square and select the appropriate piece. Unless the promotion square is on the very edge of the screen the dialogue box will automatically open with the **Queen** button under the mouse pointer enabling a fast selection for your most likely choice of piece.



If you make an illegal move or try to move out of turn, the piece will simply slide back to its original square the moment you let go of it. To see which moves are legal set the **Teaching** flag from the general options (see section 2.6.2) and the legal destination squares will glow red when you grab a piece.

To resign, click **Adjust** on your own king. This will knock your king over (in the 3d display) and end the game.

### 2.3.5 The Piece Box

Within the simulation the box containing the pieces is hidden just beneath the board in the back left-hand corner. When pieces are captured they slide off the board and drop into the box. They also emerge from the box when travelling the other way (e.g. when starting a new game with **Glide** (section 2.6.5) on).

### 2.3.6 Sound Effects

Another feature of *Cyber Chess* is the use of digitised sound effects including real voice samples. The program sets the stereo position of the sound according to the position of the supposed sound origin on the absolute screen. The sound is even 'muffled' if it is covered by another window!

The sound effects can be switched off if not desired (see section 2.6.1).

### 2.3.7 Memory Handling

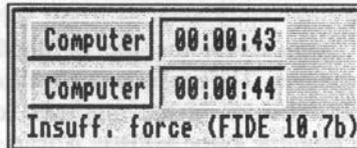
A sophisticated program such as *Cyber Chess* has varying memory requirements. As it is also a multi-tasking application it is important for it to use as little memory as possible.

The result is that *Cyber Chess* is programmed to dynamically change its memory requirements whilst it is running to maximise the free memory available for other applications. A result of this is that it can run out of memory at any time. When this happens you should create some free memory by killing applications and using the Task Manager and then try the failed operation again.

Appendix D gives information about how to minimise the memory usage of the program.

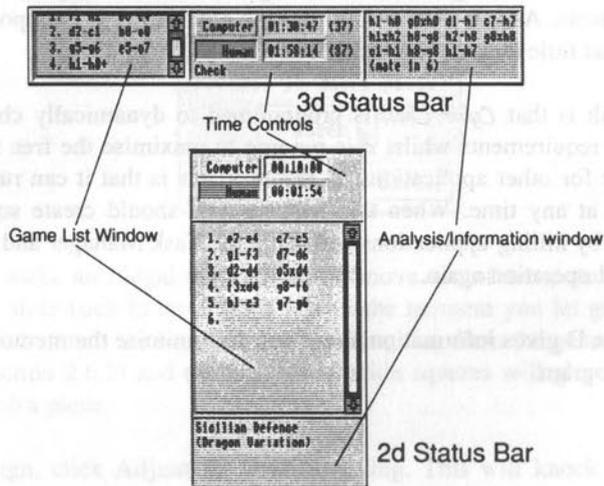
### 2.3.8 Chess Laws

*Cyber Chess* strictly follows all chess laws as laid down by the FIDE Commission on Rules of Play in November 1988. When the law invoked is especially detailed or obscure (e.g. some of the insufficient force/75 move rule clauses) the appropriate section and clause from the rules is usually announced by the program as well.



Of course, some chess laws (such as what happens if your opponent accidentally knocks the pieces onto the floor!) are not applicable.

### 2.3.9 The Status Bar



The status bar appears at the top of the window on the 3d display and at the side on the 2d display. The bar is divided into three sections. The game list window lists the moves of the game as they go by. The last move made is highlighted in red. This window will continue to scroll as

the game advances if it is already fully scrolled to the bottom. If it is not scrolled to the bottom of the list of moves it will stay in the same place to enable review of an earlier part of the game.

To restore the game to a previous position you can double click on a earlier move in the game list window. Making a move if it is your turn to play or clicking somewhere in the main window if it is a computer player's move will restart the game at this point, losing the moves that follow.

After double clicking on a previous move other positions can be reached with a single mouse click.

The time control block lists the players, their times and any status information (e.g. 'Check'). The player in the top box is the one in charge of the pieces further away from view. The depression of a box indicates that side is to play.

The time following a player is his or her clock. This is either elapsed time (if on an 'infinite' time control) or the time remaining (for all other time controls). If there is a number in brackets following the time this is the number of moves remaining to be made within the time shown.

If a player fails to make the required number of moves before the clock reaches zero the player loses the game unless the opponent has only a bare king in which case the game is a draw. (In some tournaments, when playing on very fast time controls, the game is declared a draw if the 'losing' player's opponent has no pawns and only a very small amount of material. e.g. less than a rook. If this happens whilst playing *Cyber Chess* you can give yourself an honorary draw if you wish!)

The analysis section contains information if the **Analysis** flag is on. This is what *Cyber Chess* considers the best line of play from the current position and a numerical estimate of who is winning (measured in pawns). It may also contain the name of the current opening. If the name of the current opening is unknown or its display is turned off or there is no analysis then this window is blank.

### 2.3.10 Keyboard Short-Cuts ('Hot-keys')

Many menu commands can be done directly from the keyboard by typing an appropriate code. Where such a code exists it is listed immediately after the appropriate menu entry. This will only work if there is no other application accepting your typing. The main *Cyber Chess* windows do not accept the caret.

When there are several games open at once the keyboard command applies to the window at the top.

## 2.4 The Main Menu

This is the root menu which is obtained by menuing on any of the game windows. Mostly it contains sub-menus which are dealt with in later sections but there are also three immediate commands, **Review Game**, **New game** and **Edit**.

### 2.4.1 Review Game

This opens a small dialogue box similar to the controls of a tape recorder enabling you to play back and forth through the current game. Clicking on the outer arrows will take you directly to the start or end of the game. The middle arrows play through the game continuously until you press the stop button and the inner arrows (nearest the centre) allow you to step through the game one move at a time.

Clicking with **Select** somewhere in the main window or moving a piece if it is a human player to move will restart the game at the current position.

Reviewing earlier positions can also be done by clicking in the game list window (see section 2.3.9).

### 2.4.2 New Game

This simply starts a new game, aborting the current game and restoring the players' clocks.

### 2.4.3 Edit

This allows setting up of partial games. It can also be used for creating positions for analysis or for removing pieces at the start of the game to handicap the computer.

When you select **Edit** the status bar disappears and is replaced by a line of pieces. These pieces can be dragged onto the board.

Pieces already on the board can also be moved onto any other square by dragging them. Placing a piece onto another piece will remove the second piece from the board.

To remove a piece from the board without dropping something on top of

it click **Adjust** on it. Note that it is not possible to remove a king. It is also not possible to place a pawn on the first or last rank.

When editing, the main menu changes to a different menu with four commands: **Clear**, **Reset**, **Start White** and **Start Black**.

**Clear** removes all piece except the kings (useful just before setting up end game positions) and **Reset** restores the position to the starting position (useful for setting up positions near the start of the game).

When you have set up the desired position select **Start White** or **Start Black** from the menu and the game will start with the selected side to play. You are not allowed to set up illegal positions or some impossible positions (e.g. where there are more than 32 pieces).

The program assumes that if the king and rook are on their original starting squares then they still have castling rights. i.e. the program assumes that they have not moved earlier in the game. The program also assumes that no *en passant* captures are possible from the set-up position.

In the unlikely situation that these assumptions are wrong, an earlier position should be set up in human versus human mode. You should then make moves to reach the desired position with the *en passant* capture enabled or the appropriate castling rights removed.

## 2.5 The Options Menu

This menu is used to control and change how the program is configured.

Options can apply to:

- A game: What is displayed and how the program operates.
- A player. There are two types of player: human and computer.

When *Cyber Chess* is first run the options are set to their default factory settings. (In fact these settings vary according to the machine that the program is run on. For example **Glide** is by default on when running on an ARM3 machine yet is off on an ARM2 machine). This default can be returned to at any point by selecting the **Factory Settings** option from the Options menu.

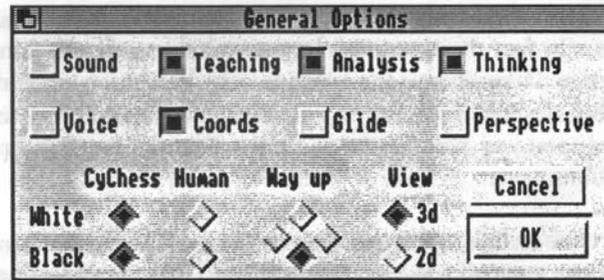
Furthermore, when you have changed the configuration of the program your choices can be saved permanently to disc by selecting **Save as default**, these will then be the default when you next run *Cyber Chess* and can also be restored from the last save with the **Restore default** command. When running from floppy disc the program will prompt you to write protect it again when the **Save as default** command is finished.

To edit the options for a player select either **White player** or **Black player** from the menu. The order these are listed in the menu depends on the orientation of the board. When one of these is selected you will then get a dialogue box containing either human options or computer options depending on the type of the player. To change the type of player that controls one side of the board select **General Options** and change it from there.

As with all option changes clicking on **OK** makes the changes you have made happen and clicking **Cancel** aborts, leaving the options as they were when you started.

## 2.6 General Options

The general options window is opened by menuing on the window and selecting **General** from the options menu. It controls all aspects of the single game that are not directly related to one of the players. When opened it shows the current configuration for the game that you menued over.



The options are as follows:

### 2.6.1 Sound/Voice

This controls whether the sound effects are made or are silent. Spoken words such as 'Check' etc count as voice whilst all other sounds are controlled by the **Sound** icon.

### 2.6.2 Teaching

This option should be of great help to chess novices. When it is selected it shows you which moves each piece can make when you pick them up by making the possible squares glow red. Only completely legal moves are shown. e.g. If you are in check the only moves that glow are ones which stop the attack on your king.

### 2.6.3 Coords

This simply determines whether the algebraic coordinates are displayed around the board or not. Most people leave this on permanently but some chess purists may wish to turn this off.

### 2.6.4 Analysis

This option gives you a window into the computer player's thinking. With this option on, the best line of play plus score will be displayed whenever a computer player in 'full strength' mode is deciding on its move. Analysis is not shown for beginner levels.

The line of play is what the computer considers the best sequence of moves from the current position and the score at the end is an estimate of who is winning/losing measured in pawns. A negative score indicates that the computer thinks it is losing and a positive score that it is winning.

If the computer sees a mating sequence it either gives '(mate in x)' as the score or '(lose in x)' depending on who the mate is for. Computer players strive to postpone the mate as long as possible if losing and win as soon as possible if the mate is for them.

The phrase '(High)' listed as the score means that the computer has found an unexpectedly good move but does not know quite how good it is yet.

### 2.6.5 Glide

This allows control over how the computer displays big changes of position. When starting a new game, or doing a **Clear** or **Reset** whilst editing, up to thirty pieces may need to move simultaneously to new squares. On an ARM2 machine the quality of animation drops so low when this happens that some users may prefer that the pieces simply vanish and reappear on their new squares without sliding.

The **Glide** option controls this. When it is switched on all pieces slide no matter how much is going on simultaneously. When switched off only small changes to the board are made using animation. Even ARM3 users may wish to switch this off after a while to get instant response to their commands.

### 2.6.6 Thinking

This show what move the computer is currently considering whenever it is a computer player's turn to move by highlighting the source and destination squares in orange. The move is always the first move displayed in the analysis window if **Analysis** is switched on.

### 2.6.7 Perspective

This only has an effect on the 3d display. When switched on it results in the pieces being perspectively scaled (i.e. they get smaller as they get further away).

There is a difference of opinion as to which looks better so both options are available for you to decide between. Having perspective scaling on causes *Cyber Chess* to use more memory so you may decide to have this switched off if memory is tight.

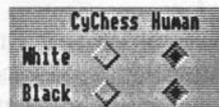
### 2.6.8 Who Controls Which Side



Computer player is black.  
Human is white.



Two computer players  
play against each other.



Two human players  
play each other. Computer  
enforces rules and provides  
a board.

These icons allow you to decide what type of player controls the white and black pieces.

Computer versus computer play is a genuine competition between two computer players. In most other programs only one computer player is present and it simply plays both sides of the board one after the other, both players being the same.

In *Cyber Chess* a second computer player is created with its own memory, time control, style, opening book, table, strength level, configuration and draw value and it competes against the other computer player as a separate chess-playing entity within the program.

The advantage of this approach is that it is possible to compare wildly different setups/opening books by placing them in direct competition. The one disadvantage is that a large chunk of new RAM is needed in which to create the new opponent.

In human versus human play again both sides can be set up differently. The computer simply records the game, enforces the rules and provides a

visual representation of the position.

### 2.6.9 Board Orientation



White plays  
bottom to top.



White plays  
left to right.



White plays  
top to bottom.



White plays  
right to left.

This determines which way up the board is shown. Conceptually the position of the selected radio icon is where the white pieces are. If *Coords* (section 2.6.3) is set you can see which way up the board is currently without referring to the options.

### 2.6.10 3d/2d

These icons determine whether the window contains a three-dimensional simulation of the board or an overhead two-dimensional view. See section 2.3.2 for more information about the different displays.

## 2.7 Time Controls

The one thing that human and computer players have in common is the time controls. The time control system is sophisticated and there are three 'types'.

### 2.7.1 Infinite

This signifies that there is not a time control! When set for a human player this means that you can think for as long as you wish without any danger of losing on time.

For a computer player it lets the computer think very deeply about the position. The computer will only make a move with this time control if:

- You force it to move with a **Move now** command.
- It finds a forced mate for either side.
- There is only one legal move. (No need to think at all!)
- The position is in its selected book and it can make a book move.

This option is useful when combined with the **Analysis** option and 'full strength' mode for analysing specific positions and solving mate problems. If necessary the program can be left overnight with a position to analyse and will have a deep analysis the next morning. Set the table size (section 2.9.6) as high as you can if doing this.

When a player has an **Infinite** time control the program shows only his or her elapsed thinking time. i.e. The clock counts upwards instead of downwards.

### 2.7.2 Match Opponent

This option is really only useful for computer players but can be set for human players if you wish. It sets the rate of play to whatever the player's *opponent* is playing at.

It works by initially giving the player a very small amount of time (two minutes) and then incrementing the available time whilst the opponent is playing. It is useful for ensuring that the computer player is on exactly equal terms with its opponent in terms of time control. However it does handicap the computer player a little by giving it very little choice about how to organise its thinking time.

### 2.7.3 Make... Time Controls

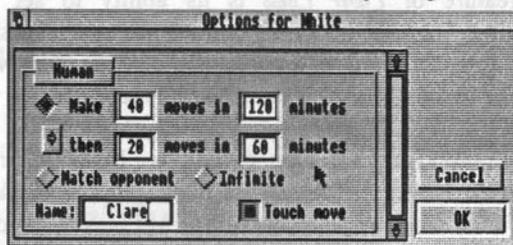
A unique feature of *Cyber Chess* is its ability to set sophisticated tournament time controls. The time control has two stages. The second stage is only relevant if the first contains a number of moves instead of 'All'. When the second control is complete it is repeated.

For example, supposing the time control is "Make 40 moves in 120 minutes then 20 moves in 60 minutes". The player's clock will start at two hours and count down until the player has played his or her fortieth move. When the fortieth move has been made an extra hour will be added to the clock so the player will have an hour plus any time remaining from the original two hours to play the next twenty moves. If the game lasts that extra twenty moves then the player will have another hour added on to play the next twenty moves in and so on until the end of the game.

If a time control has an 'All' before 'moves' in either stage then this means that the time specified is for all the remaining moves in the game no matter how long it lasts. If this is present in the first time control stage then the second one is redundant (it will never be reached) and it is greyed out by the program.

Finally a number of fixed time controls are available from the menu icon. These give a variety of time controls ranging from **Lightning** ("All moves in 5 minutes") to the longer tournament time controls. This menu can make use of this sophisticated feature very simple indeed.

## 2.8 Options for Human players



In addition to the time controls human options allow you to personalise your game by entering your name instead of the default 'Human'. This name will be saved permanently if you **Save as default**.

It also allows you to specify whether you wish touch move to be enforced. If **Touch move** is on and you pick up one of your own pieces you will not be allowed to make any move that does not involve that piece even if you place it back on its original square. If you pick up a piece that has no legal moves then this restriction does not apply.

If it is off you can place the piece back on its original square (or an illegal square) and then move another piece without being reprimanded.

The laws of chess include this 'touch and move' restriction and it is universally enforced in human only games. However, we suspect most people will want to leave it off unless wishing to be very self-disciplined.

If you are a beginner and wish to make use of the **Teaching** option you will *need* to have **Touch move** off or you will only be able to find out the moves of one piece.

## 2.9 Options for Computer Players

This option setting allows you to control the behaviour of a computer player. There are many options in a scrolling dialogue box which is shown in full here.

### 2.9.1. Full Strength/Beginner.

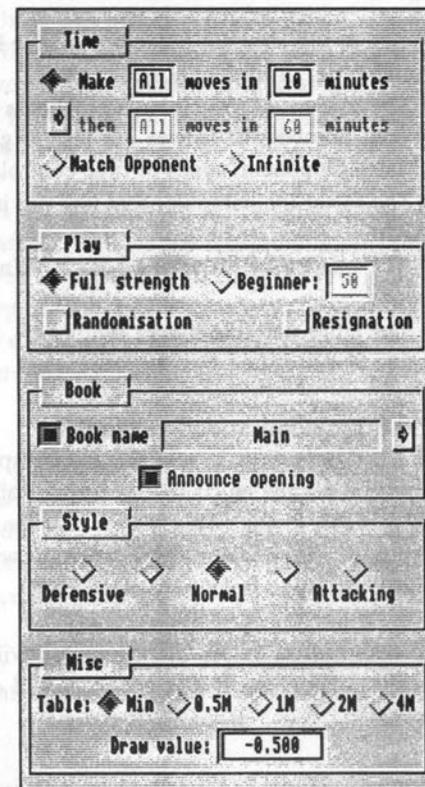
This enables you to select the strength level that the computer opponent will play at. **Full strength** means that the computer will play as well as it can within the specified time control.

If **Beginner** is selected the computer will deliberately play at a lower standard to be more interesting to chess learners. There is nothing more demoralising if you are learning than to be destroyed every time by a computer playing at its fastest time control.

The precise level of play is determined by the beginner level entered. Zero is the lowest which corresponds to almost random play. Level 99 is the highest which is just short of 'Full strength' standard at a fast time control.

At the lower beginner levels positional sense is almost non-existent and the computer player will even blunder away pieces!

Beginner level players will only take at most the first few moves from any book line (see section 3.1). The lower levels may only take the first



move. Response time in beginner mode is almost instant so the time controls are effectively ignored.

When in full strength mode the precise level of play is determined by (in rough order of importance):

- The amount of time it has to make its moves: the more time the better. (Fixed numbers of moves are also slightly better than "All moves in"/"Match Opponent" types of time controls.)
- The faster the computer that you run it on. e.g. ARM3 is better than an ARM2.
- The quality of its opening book. **Main** is the best from the supplied books.
- The table size (the bigger the better), style ('Normal' is best) and draw value (see section 2.9).

### 2.9.3 Randomisation/Resignation

If **randomisation** is selected the computer player will chose randomly between almost equal moves instead of always selecting the one that is fractionally better. This means that the computer will not always make the same move in the same situation with the same time control adding some variety to frequently played lines.

If **resignation** is set the computer will resign if it ever considers its position hopeless. If it is not set it will continue bravely onwards until it is mated.

### 2.9.4 Book

If selected then *Cyber Chess* will take the first moves of the game from the named book. An appropriate book can be selected from the menu generated by the menu icon. If **Announce opening** is set the computer will display the opening name in the analysis window when it is played. Full details of *Cyber Chess's* opening book support is contained in section 3.

The supplied opening books are: **Main**, the strongest of the books containing a limited repertoire which is comprehensively covered. i.e. most positions have only one move listed for the appropriate colour and most sensible (and not sensible) responses for the opposing colour. Use **Main** for serious games.

There is also **Varied** which contains the first few moves of a large number of openings/variations. Using this means that your games will be very varied but the computer will go 'out of book' quite soon and will sometimes play openings that are slightly dubious. It is also useful for familiarising yourself with the names of the various openings when accompanied by the **Announce opening** flag.

Finally there is **Grob** which is an example of a specialist book. It concentrates solely on the Grob attack. This (rather unauthodox) opening has been chosen as it can be played by both sides and the first few moves are unforcing so there are a large number of variations/transpositions. Thus, it makes great use of *Cyber Chess's* advanced opening book facilities and is mainly included as an example.

### 2.9.5 Style

It is well known that different human players have different playing styles. With this option you have some control over your computer opponent's style. The further to the right you select the more aggressive your opponent will be. The optimum level is in the middle as over aggressive play can lead to all sorts of trouble.

This option can be used to satisfy personal taste or to prepare for a match against a particularly styled human opponent.

### 2.9.6 Table.

This allows you to give over large chunks of free RAM to the computer player which it can use to enhance its playing standard. This is of no use on a 1Mb machine but users with 2Mb or more can improve the 'full strength' playing standard of their computer by allocating as much memory as possible to their opponent. Naturally the 4Mb option is only of use to those lucky enough to have an 8Mb machine!!

Large table sizes are most effective in the end game when there are only a few pieces left on the board but have a small positive effect even just after the opening. It also helps more on long time controls compared with fast ones and on faster machines.

### 2.9.7 Draw Value

This feature allows you to tell your opponent how 'valuable' a drawn game is. Normally chess computers will go for a draw if they consider themselves to be losing even if it is just by a fraction of a pawn. If they consider themselves to be up they will avoid any variation leading to a draw. If you want to simulate this behaviour set the draw value to 0.

But supposing the computer is playing an opponent who is very much worse than itself? In this situation being slightly down is likely to be only a temporary problem and going for a draw is the wrong decision.

What we need is some way of communicating to the computer that it should have contempt for its opponent! This is done in *Cyber Chess* by setting the draw value to something negative such as "-2.00". Only if the computer is losing by more than two pawns will it then repeat moves, force the stalemate or accept the draw offer.

Similarly if the computer is playing an opponent for whom it should have lots of respect, the draw value should be set positive (e.g. "1.50") to indicate that a draw is still a good idea even if temporarily a pawn or so up.

Other situations where you may wish to set this value are special tournament situations. e.g. In a match where you only need to draw the final game to win (set the value very high) or must win to stay in contention (set the value negative and big).

## 2.10 The Play Menu.

Options from the play menu are:

### 2.10.1 Move Now.

Forces the computer to move immediately. If **Thinking** is set it will make the currently highlighted move. If the computer does not have a move in hand this will do nothing.

### 2.10.2 Retract Move.

This undoes the last move made and allows the player to play it again. To go back several moves double click on the appropriate place on the game list window and start play from there by either making a move yourself or clicking within the main window to start the computer player.

### 2.10.3 Offer Draw

*Cyber Chess* follows strict chess conventions and only allows you to do this whilst it is your turn to move (it is greyed out at other times). You then make your move and your computer opponent thinks about it. The computer will then either accept or it will make its move indicating that it does not want a draw.

Once you have offered a draw you cannot retract the offer.

### 2.10.4 Give Hint

The computer will suggest the move that it considers best for you to do. This will either be the move calculated from its analysis of the position or it will come from its opening book.

Occasionally it cannot suggest a move. When this happens the option is greyed out and cannot be selected.

The move is shown by moving the piece to the appropriate square and then back again analogously to how a human teacher would suggest a move.

Some chess programs continuously display a hint move. *Cyber Chess* does not do this as we believe that most people want to play the computer under their own steam and only get suggestions in the positions where

they need help.

### 2.10.5 Pause/Continue

This freezes the game and the clocks and releases it again. Useful for when the doorbell rings during a lightning game!

### 2.10.6 Show Captured

This causes all the captured pieces to pop up out of the piece box and do a tour of the board. Similar opposing pieces are paired together to make it clear who is up on material and by how much.

After a certain point in the game it is much easier to see who is winning by looking at the pieces on the board so the option becomes greyed out after the late middle-game.

If there are no captured pieces a little reminder will appear to say so.

### 2.10.7 Swap Sides

This swaps both players over and rotates the board by 180 degrees. Useful for when the computer is beating you!

## 2.11 The Save Menu

The save menu allows you to save either the current game listing or the current position in various formats.

### 2.11.1 Save Game

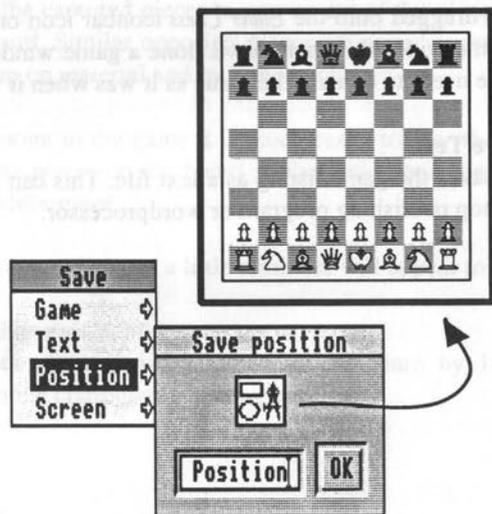
**Save game** saves the game in internal format. This file can be double clicked on, dragged onto the *Cyber Chess* iconbar icon or dragged into an existing game window. When this is done a game window is created (or existing one used) to contain the game as it was when it was saved.

### 2.11.2 Save Text

**Save text** saves the game listing as a text file. This can be saved straight into a desktop publishing program or wordprocessor.

### 2.11.3 Save Position

**Save position** saves the current position as a drawfile which looks similar to the chess diagrams found in newspapers and magazines. The board is always shown with white at the bottom no matter what the orientation of the board in the main window. This is the conventional way that chess positions are represented.



Provided you are the legal owner of your copy of *Cyber Chess*, any chess diagrams that you create in this way can be freely used within your own publications.

### 2.11.4 Save Screen

**Save screen** saves all the contents of the current main window except that which is contained within the game window. To grab everything use the **Get screen area** option of Paint.

### 2.11.5 Printing

To print the game list or position **Save text** or **Save position** and drag the icon onto a suitable desktop printer driver. This way every printer suitable for the Archimedes can be used productively with *Cyber Chess*.

## 3. Opening Book Support

### 3.1 Introduction

Chess has been estimated to have around  $10^{100}$  ('1' with 100 zeros after it) different positions! Thus, central to every chess program must be an algorithm for analysing a position it has not seen before and deciding on a move.

However, at the start of the game there *are* positions that have been reached many times before and have been thoroughly analysed by top players. Any computer which attempted to do all the analysis of these positions itself would find itself playing inferior moves to an opponent who had learnt the Grandmaster analysis. Furthermore, the computer would have used up lots of valuable thinking time whilst its opponent, playing from memory, would have used up almost none.

An opening book in the computer chess sense is basically a computer file which the program can read giving instant advice as to what moves to play in certain opening positions. In *Cyber Chess* this file is also human readable enabling it to be edited in a natural way with standard text editors such as Edit.

*Cyber Chess* has very advanced opening book support including:

- Full support for book transpositions. i.e. If a specific position can be reached by more than one sequence of moves each sequence and the moves that follow do not need to be listed separately. *Cyber Chess* will realise that this position is mentioned elsewhere and jump to the appropriate place in the book automatically.
- Opening lines can be of any length (up to 99 moves) and different variations within a line can be described without having to list all the previous moves again.
- Opening traps can be included in the book and different openings can be specified for white and black. Most computer books contain just the optimum moves so if an opponent plays a known inferior move the computer does not always know how to respond to take advantage of

this. Within a *Cyber Chess* book you can follow any move with a '?' to indicate that it is a bad move. Any computer player that reads this move will not play it, but if its opponent does the following moves in the line will show the computer player how to respond. This facility can also be used to 'disable' certain openings and give the computer a different repertoire for black than white.

- The computer can go back into book again if a known position is reached by a strange route. Most chess computers forget the book (they go 'out of book') the moment their listed opening line comes to an end. *Cyber Chess* continues to check the book even after this happens and can occasionally find itself back at a known position. Only when the board position is *irrevocably* different from all the positions described in its book will it stop looking.

- Fuzzy moves or advice can be put in the book to indicate a strategy after the opening comes to an end. Often computers come out of book with no understanding of the position they are in and will make moves which are contrary to the ideas behind the opening. With *Cyber Chess* you can specify plans which it will incorporate into its analysis of the subsequent positions. In this way the book can still influence the computer's play long after the end of the opening line.

- Opening names. The names of the openings can be listed in the book. If the **Announce opening** flag is set these names will be announced by the player as the moves are played.

- Multiple books. Many different books can be incorporated into the program. The available books are scanned by the program and presented in a menu. Different computer players in the same or different games can refer to these different books for their opening knowledge.

- Hints. In the opening a request for a hint from a computer opponent will be looked up in the book. Naturally moves listed as bad will not be given!

## 3.2 Editing or Creating Books

In order to edit or create a new opening book you will need to know both where to find the books and what the syntax of the book is. This section aims to tell you just that.

It should be noted that editing the books is an advanced feature of *Cyber Chess*. If you are using the program from floppy disc it is important that you *back up* the books before editing them and *write protect* the master disc again after making any changes.

### 3.2.1 Where to find the Books

The books are stored within the directory Books which in turn is within the !CyChess application.

To open up the application hold down the *Shift* key and then double click on !CyChess within the filer window. This will open up another filer window containing a directory called 'Books'. *Do not touch any of the other files that you see at this point or the program may cease to work.* Opening up that directory will show you a number of text files each of which is named after a book which is present in the program.



These files can be edited with Edit or any other text editor in the normal way. To create a new book simply create it with Edit and save it into this directory under a new name. When *Cyber Chess* first starts up it scans this directory and the new book will then appear in the book menu and be read by any computer player which has your new book selected.

Changes to or additions of books will only take effect the next time *Cyber Chess* is run.

### 3.2.2 The Book Contents

In order to edit or create a new book you will have to know what to type. The strict syntax is listed in appendix C but it should be possible to understand what this is simply by looking at the existing books. For example here is a tiny fragment of an opening book showing the computer player how to respond to Petroff's Defence as White.

```
#Petroff's Defence. [1]
1 e2e4 e7e5
2 g1f3 g8f6
?Petroff's Defence. [2]
3 d2d4

#3 . d7d6 transposes to Philidor's Defence [3]

3 . d7d5?
4 e4d5
4 . e5e4? [4]
5 f3e5 f6d5
6 f1c4 c8e6
7 oo
fw f1e1 [5]
4 . e5d4
5 f1b5
```

You will notice that the moves are listed in a very similar fashion to how they would be described in a (paper!) chess book. Each move starts with a move number. To indicate starting with the black move a hyphen ('-') follows the move number showing that the White move is listed previously (normally '...' is used in game annotations).

The notation is much simpler than that used elsewhere in the program. Moves are indicated by immediately following the source square with the destination square. Castling moves are represented with 'oo' for kingside castling and 'ooo' for queenside castling.

If the move number is less than the move listed previously it describes a sub-line to the main line listed up to that point. For example the above fragment shows the moves of the opening up to white's third move and then shows how to respond to an inferior black move (d7d5) at this point. This description of the response in turn includes some sub-sequences. The 'main line' responses for black at move 3 would be considered later.

If the program finds two or more good moves listed for the same position it will select randomly between them when giving a hint or deciding what move to play.

[1] is a comment. Any line following a '#' is completely ignored by the program.

[2] is an announcement of an opening. If the **Announce Opening** flag is on this is the text that is displayed in the analysis window. The line starts with a '?' indicating this. It immediately follows the key move that identifies the opening. In this case (Petroff's defence) the key move is black moving the knight to f6 after the sequence 1. e2e4 e7e5 2. g1f3.

[3] This comment notes that the move d7d6 at this point does not need to be covered as the resulting position is covered in the description of Philidor's Defence described elsewhere in the book. This and all other possible transpositions are automatically detected by *Cyber Chess*.

[4] This is an example of a 'trap move'. The move is listed as inferior by following it with a '?'. This ensures that the move will not be given as a hint and that a computer player following the black line will not play it. However if it is played by the computer's opponent the following moves show the computer how to capitalise on this error. In this case it follows another inferior move d7d5 and shows the computer a line which makes black's e pawn weak.

[5] This is an example of a fuzzy move. The line starts 'fw' showing that the advice is for White (use 'fb' for advice to black). Then follows a sequence of moves describing a plan. In this case the plan is a single move (attack the weak e pawn with the rook) but it can be any length you wish. If you wish to advise against certain moves place a '?' after the moves in the plan.

The fuzzy moves are not made instantly but are taken account of during the computer's normal analysis with a heavy positive bias (or negative if labelled with a '?'). As the game progresses the bias towards the advice moves lessens as the position gets more and more different from the one where the advice was given.

### 3.2.3 Errors

If you introduce syntax errors into the book the program will usually complain the first time the book is examined, giving a character and line number so you can find it with Edit.

If the error is entering an illegal move it will only be found when the precise position at which the illegal move is listed appears on the board. It is a good idea therefore to check out the lines you have created in real play immediately after entering them.

## Appendix A: Desktop Publishing Example

The following is a simple example of what you can produce using *Cyber Chess* to desktop publish your chess games. The game score and diagrams were saved out of the program using **Save text** and **Save position** directly into the Impression frames. Only a tiny amount of subsequent editing was then needed.

White: Paul Morphy 12. d2-f4 o-o  
Black: A. Anderseen 13. f4xc7 c6-d4  
7th Match game 1858 14. d1xd4 c5xc7  
Opening: Centre Counter 15. e2-d3 c8-g4  
16. f3-g5 f8-d8  
17. d4-b4 g4-c8  
18. f1-e1 a7-a5  
19. b4-e7 c7xe7  
20. e1xe7 f6-d5  
21. d3xh7+ g8-h8  
22. e7xf7 d5-c3  
23. b1-e1 c3xa2  
24. f7-f4 a8-a6  
25. h7-d3

Black Resigns.



6. f1-e2 f8-b4  
7. g1-f3 b4xc3+  
8. b2xc3 e5xc3+  
9. c1-d2 c3-c5  
10. a1-b1 b8-c6  
11. o-o g8-f6



## Appendix B: Example Master Games

Within the directory 'games' are a few classic games taken from recent chess history.

These are as follows:

### G1

White: Paul Morphy.

Black: Duke of Brunswick and Count Isouard.

Played in Paris 1858

Opening: Philidor's Defence

Paul Morphy (1837-1884) had one of the shortest chess careers out of all those considered as great champions. His career lasted only three years and around 75 serious games before retiring from tournament chess. This match was played during the interval of an opera performance and was a friendly played between him and two dignitaries who were in consultation.

### G2

White: José Raoul Capablanca.

Black: F Dus-Chotimirsky

Played in St Petersburg 1913.

Opening: Ruy Lopez

Capablanca (1888-1942) is generally considered to be one of the best natural players in history. Among his many achievements was an eight year period (1916-1924) without a single defeat.

### G3

White: Robert J Fischer

Black: Tigran Petrosian

Buenos Aires, 1971

Opening: Sicilian

'Bobby' Fischer (1943-) is the most controversial and perhaps the best player of all time. When active as a player he dominated his contemporaries often by huge margins and won the World Championship off Boris Spassky. Here he defeats another former World Champion Tigran Petrosian.

### G4

White: Gary Kasparov

Black: Anatoly Karpov

Opening: Nimzo-Indian Defence

11th World Championship game 1985

Gary Kasparov (1963-) is the youngest ever World Chess Champion. This game is often considered the turning point of his successful defeat of the former World Champion Anatoly Karpov (1951-).

### G5

White: Anatoly Karpov

Black: Deep Thought

Harvard University, 1990.

Opening: Caro-Kann

This game represents the best in computer play at the time of writing against a former human World Champion. Deep Thought is the current computer World Champion and is built of dedicated hardware which evaluates several million positions each second. Although the computer eventually lost, it had several easy opportunities to draw during the game (which it chose to ignore) and dominated the opening and early middlegame.

## Appendix C: Opening Book Syntax.

This is a precise description of the syntax opening book language in Backus Naur form (BNF). Use it to check your books/book changes when the program tells you about syntax errors and you are unaware what is wrong from comparison with the supplied books.

**::=** 'is composed of'  
**|** 'or'  
**[]\*** anything within the square brackets can be repeated zero or more times.  
**<>** Indicates the expansion of another symbol defined elsewhere.  
**ASCII** The character code with the subsequent number.  
**String** any sequence of non-control characters.  
Any fixed character sequence/keyword is shown in bold.

**Book::=** [**<Line>**]\*  
**Space::=** ASCII 32  
**OWS::=** [**<Space>**]\*  
**CWS::=** **<Space>**[**<Space>**]\*  
**Column::=** **a | b | c | d | e | f | g | h**  
**Row::=** **1 | 2 | 3 | 4 | 5 | 6 | 7 | 8**  
**Square::=** **<Column>****<Row>**  
**Move1::=** **<Square>****<Square>** | **oo** | **ooo**  
**Move2::=** **<Move1>** | **<Move1>?**  
**Digit::=** **1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0**  
**MoveNum::=** **<Digit>** | **<Digit>****<Digit>**  
**MovePair::=** **<Move2>****<CWS>****<Move2>** | **-<CWS>****<Move2>** | **<Move2>**  
**NewLine::=** ASCII 10 | ASCII 13  
**Line::=** **<OWS>****#<String>****<NewLine>** | **<OWS>****?<String>****<NewLine>** | **fw<CWS>****<Move2>****[<CWS>****<Move2>]\*<OWS>****<NewLine>** | **fb<CWS>****<Move2>****[<CWS>****<Move2>]\*<OWS>****<NewLine>** | **<MoveNum>****<CWS>****<MovePair>****<OWS>****<NewLine>** | **<OWS>****<NewLine>**

Notes:

- Notice that the algebraic notation is simpler than that used elsewhere within the program. e.g. No checks on the king are indicated nor any other move information. Capture moves are inferred by the presence of an enemy piece on the destination square or, in the case of *en passant* captures, by the pawn changing files onto the appropriate square when such a capture is possible.
- **oo** and **ooo** indicate castling moves. **oo** for kingside castling and **ooo** for queenside castling.
- It is not possible to specify underpromotions in the book but this is unlikely to be useful (promotions to queen are indicated simply by listing a pawn move to the final rank).
- CWS stands for Compulsory White Space. Informally it shows you where you have to put a gap to separate things out.
- OWS stands for Optional White Space. Informally it shows you where you can put a gap if you want.
- It is quite possible to generate a book which is syntactically correct but which still generates errors. e.g. by missing out moves, entering illegal moves etc. When errors like that occur, though, it is usually easy to see where you have gone wrong.

## Appendix D:Memory Usage

This appendix gives you some of the less obvious tips on how to minimise the amount of memory that *Cyber Chess* uses.

- Each computer player needs a large chunk of memory. Therefore, human versus computer games use much less RAM than computer versus computer games.
- If both **Teaching** and **Thinking** are off in all games, *Cyber Chess* does not need to store the data to display highlights around the squares so it uses less RAM. This is especially important when using the 3D display.
- The 2D display uses slightly less memory than the 3D.
- The larger the book the computer player uses the more memory needs to be allocated to hold it. Switching the book off in all computer players or using small books will save some memory.
- Switching **Perspective** off when in the 3D display saves RAM.
- Naturally, you can save lots of memory by setting the table size of all computer players to 'Min' if not already there.
- If **Glide** is on the memory usage of the program will temporarily rise when generating complicated animated sequences. The same applies when doing a **Show Captured** command. Switch **Glide** off if short of memory and count material by looking at the pieces on the board.
- If you have more than one game open setting them up similarly will save memory. For example if one game is 3D and another is 2D then both 3D and 2D graphics needs to be stored by the program. If they are both the same then they can share the data saving RAM. The same applies for opening books (make all computer players share the same one) and board orientation.

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