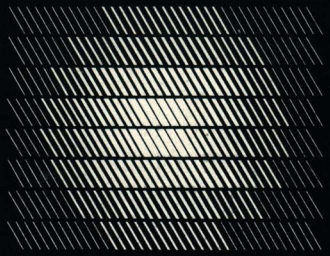
VideoBrain™

Family Computer
Cartridge Program
Instructions



Entertainment

Vice Versa™
EN06

For best results,
read this brochure before
using cartridge

VideoBrain™

Vice Versa™

Entertainment Cartridge

- A space age update of an ancient oriental game
- Play against computerized opponents or a friend
- For adults and children 7 and over

FOR BEST RESULTS READ THIS BROCHURE BEFORE USING CARTRIDGE

Cartridge EN06

Vice Versa Introduction

Vice Versa, a thoroughly modern version of a 19th century board game called "Reversi," comes from the same family as the oriental games "Go" and "Go Moku." In fact, there have been many other versions of Vice Versa before this but none of them have managed to enjoy the popularity this fast-paced and captivating game deserves. In all its other versions, playing involves the tedious chore of turning the pieces by hand and counting them up at the end of the game.

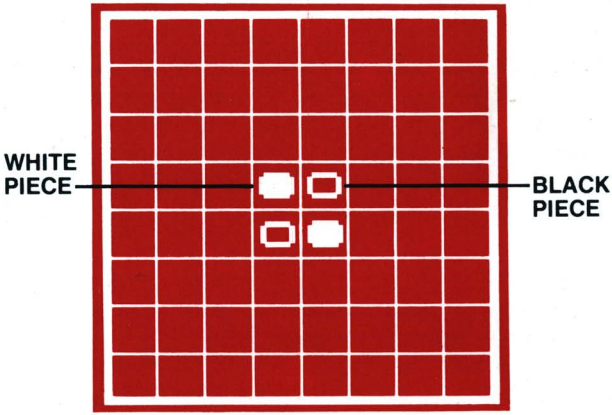
But now the power of the computer lets you enjoy Vice Versa like never before. In Vice Versa, VideoBrain will reverse the pieces for you, automatically and infallibly. It will also keep score and keep you from making illegal plays. *It will even play against you with five computerized opponents of varying skills!*

The brain behind VideoBrain's Vice Versa game is Dr. Arthur Samuel, Professor Emeritus at Stanford University. Dr. Samuel, who also created the VideoBrain Checkers game, is world reknowned for his experiments with new techniques of artificial intelligence. Now his brilliant work brings you countless fun-filled hours with Vice Versa.

Vice Versa: The Objective, Rules And Strategy

The OBJECTIVE of Vice Versa is to end the game with a majority of your color pieces on the board.

Rules:
The game is played on a checkerboard square with black and white pieces. Players choose colors and the game begins, always with four original pieces arranged like this



You never move any of the pieces already on the board. The players take turns adding *new* pieces, one at a time, until the board is filled or until neither player can make another play.

New pieces can only be placed on squares—called FLANKING SQUARES—that conform to these rules:

1. The square must be empty
2. The square must be directly next to a square occupied by an opponent's piece (or a string of his pieces) in any direction—either horizontally, vertically or diagonally.
3. One of your own pieces must be directly on the other side of your opponent's piece (or string of pieces) with no empty squares in between.

When you have placed your new piece on a properly flanking square all of your opponent's pieces in the flanked string or strings are "captured" and turned into pieces of *your* color. You capture only those pieces that are flanked as a *direct* result of your play. Pieces that become trapped between your old pieces and your newly captured pieces are not captured.

When one player cannot make a legal play, he loses his turn and the other player can then play again. (If you are clever you can make this happen to your opponent for several plays in a row.)

The game is over when all the squares have been filled or when neither player can make a legal play.

The pieces are then counted and the player with the most pieces of his color on the board wins the game.

Strategy:
Because they have less chance of being flanked, outside pieces are extremely valuable and corner pieces are the most valuable. Therefore, a wise player will quickly work his way toward the outside of the board in order to capture these strategic locations. As you become more proficient you will discover other factors that influence your play. Often the more dramatic plays, ones which reverse whole rows of enemy pieces, are not the most advantageous in the long run and should be considered carefully.

Inserting The Cartridge

1. Make sure your VideoBrain computer is attached to your TV as described in the Owner's Manual. Check that power is on.

2. Push the cartridge carrier release button above the VideoBrain keyboard in order to swing the cartridge carrier door up.

3. With the label facing up, slide the cartridge all the way into the tracks suspended from the cartridge carrier door.

4. Gently push the cartridge door down into the computer until it locks.

5. Push the MASTER CONTROL button. The title of the cartridge should appear on your TV for two seconds.

Operating The Program

After two seconds, the title display on your TV screen will change to look like this:

If you've played Dr. Samuel's CHECKERS game you'll recognize the first four players. Now a new addition, Ernest, has joined the roster, *and* you have the option of playing Vice Versa with a human friend by keying F.

As in CHECKERS:

ABE, though quick and aggressive, is not very bright and will beat you only if you are just beginning or are out of practice.

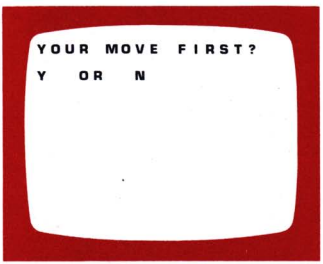
BETTY is probably the most satisfying opponent because she is quick and bright—challenging, but not unbeatable.

CHARLIE is more of a challenge and has an annoying way of doing things right.

DOROTHY is conservative, cautious, difficult to beat. You'll need all your strategic skills to win.

ERNEST is the all-time champion, but he takes a long time to think. Save him for times when *you* feel especially aggressive, bright, and hard to beat yourself!

Make your opponent choice and type in the letter A, B, C, D, E, or F on your VideoBrain keyboard. This display will appear next:



If you want the first turn type Y for yes. If not, type N for no.

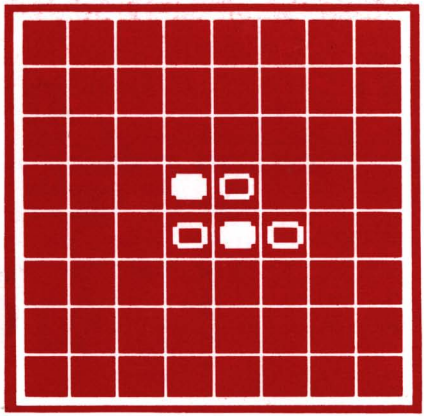
If you are playing with a friend, this screen is omitted and the player using JOYSTICK #1 goes first.

The next screen on the VideoBrain will display the four original pieces on a checkerboard square and you'll see a small, lighted square called a "cursor" somewhere on the board.

The BLACK pieces (actually outlined in white) always play first. So if you typed Y, or hold JOYSTICK #1 when you're playing with a friend, it's your move.

If you typed N, or your opponent holds JOYSTICK #1, VideoBrain or your opponent will play BLACK and move first.

A typical first move for BLACK is shown on the board on this page.



Operating The Joystick

Mastering the joystick takes a little skill in itself. If you take time to master it, you'll be able to concentrate more on strategy when you play the game.

You use the joystick to place your men on the screen. Guide the cursor to the square where you want to place your man and press the HIT BUTTON. The joystick will be more responsive throughout the game if you move the joystick lever around in a circle one time before your first move.

You will probably find it easiest to push the hit button as the cursor moves over the square rather than trying to stop the cursor on the square.

If your selected square is a legal one by the rules of the game, your new piece will blink a few times and a tone will inform you of your move. The VideoBrain will then automatically reverse all the captured men in your play and turn their colors one by one to match yours with a tone to signal each reversal.

If you try to make an illegal play the VideoBrain will inform you with one of these signals: "DOES NOT FLANK" or "NON EMPTY SQUARE." Use your joystick to select a new square.

Scoring And Score Displays:

VideoBrain displays the score after every turn. If you're playing against a friend, the score of the player currently taking his turn will be displayed first. If you're playing against the computer, your score will always be displayed first. If the score of the player taking his turn (or you against the computer) is even, the background color of your TV screen will be blue. If the player taking his turn is ahead, the screen will be green.

At the end of the game the computer will count up the colored pieces on the board and display a message identifying the winner.

Handicapping
When a novice plays Vice Versa against an expert, it helps balance the game if you agree to a point-handicap before the first move. At the end of the game the handicap is subtracted from the expert's score, and added to the novice's.

For example, if the handicap you agree to is 10:

	EXPERT	NOVICE
ACTUAL SCORE	41	23
HANDICAP	−10	+10
FINAL SCORE	31	33

In this example, the novice would win the handicapped game by 2 points (33 vs 31). VideoBrain does not keep track of the handicapped game for you—you'll have to do that for yourself.

Remember, handicaps are for the beginner's benefit —as his skill increases, his handicap is proportionally reduced.

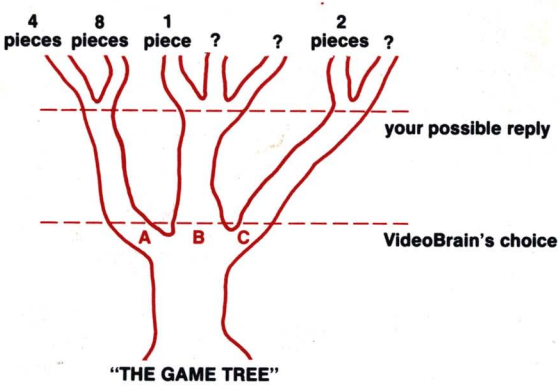
How the Computer Makes Its Moves

When it's VideoBrain's turn to play, you'll see a changing pattern above the board that actually reflects a section of program memory being used by an artificial intelligence technique known as Alpha-Beta Pruning. It's the VideoBrain's way of finding the move that yields the best score and strategic position with a minimum amount of work.

You might visualize the way the technique works by thinking of the computer's possible moves, your replies, its counter replies, etc., as branches on a "game tree." There would actually be millions of such combinations were each one to be followed out to the end of the game. Even VideoBrain, with its advantage of speed and accuracy, would take more time than you'd care to wait exploring every combination. Instead the program "looks ahead" only a very few moves, depending on the skill level you've selected. (Abe is the lowest, and Ernest the highest.) Looking ahead several moves can easily reveal strong tactics that may not seem to be particularly good looking at the initial move alone. So don't be fooled by what looks like a silly move now. The program could be setting a trap for you later!

But even limiting the depth of the search (the height of the tree) is not enough, so the program makes use of a trick that all good game players use instinctively. Computer scientists dignify this technique by calling it Alpha-Beta Pruning. To understand

it better, take a look at the very simple game tree below:



"THE GAME TREE"

In this example, ABE finds 3 moves available. (Frequently there are more.) He explores branch A and finds 2 possible player's replies—one leading to a net gain of 4 pieces for ABE, and the other of 8 pieces. It assumes that the player will, of course, try to minimize the program's gain, so branch A is rated +4. Next ABE looks at branch B and finds for the first player's reply that ABE can only gain 1 piece. Since this is worse than the +4 for branch A it is not necessary for the program to look at the other player's replies for branch B and it doesn't. This is pretty obvious. It becomes more difficult to see in the very complicated trees that Dorothy or Ernest consider, but the same principle applies. This is the number of moves your computerized Vice Versa opponents can look ahead:

NUMBER OF MOVES LOOKED AHEAD

	COMPUTER	USER	TOTAL
ABE	1	1	2
BETTY	2	1	3
CHARLIE	2	2	4
DOROTHY	3	2	5
ERNEST	3	3	6

Alpha-Beta pruning was first used by Dr. Samuel for a computer checker program he wrote in the early 1950s. The technique was independently studied and named by Professor John McCarthy of the Stanford Artificial Intelligence Laboratory. It is related to an earlier mathematical technique known as "branch and bound."

Dr. Samuel is working on a new program called "Life" (See Scientific American for October and November 1970, and February 1971). He is adding several original variations that have never been programmed before! Look for "Life" at your store.

Vice Versa™ is just one of many exciting cartridges brought to you by VideoBrain Computer Company. We suggest that you try these others to entertain you, educate you, or help you around the home:

Money Management

VB-59 The Programmable™
VB-81 The Financier™
VB-1000 Money Manager™
VB-1100 Budget System
VB-1200 Information Manager

Communication

CM01 Timeshare

Education

ED01 Music Teacher 1
ED02 Math Tutor 1
ED03 Wordwise™ 1
ED04 Wordwise™ 2
ED05 VideoArtist™
ED06 Lemonade Stand—
A Business Simulation
ED07 Musicianship 1
ED08 Number Cross™
ED09 Historical Simulation—
France In the Old Regime

Entertainment

EN01 Gladiator
EN02 Pinball
EN03 Tennis
EN04 Checkers
EN05 Blackjack
EN08 Music Programmer
EN09 Programmable Football

Limited 90-Day Warranty on Vice Versa Cartridge:

For 90 days from the date of purchase, VideoBrain Computer Co. will repair any defect in material or workmanship in this Cartridge free of charge.

To obtain warranty service, return the Cartridge post paid, with sales receipt showing date of purchase, to the VideoBrain Service Center with address shown below.

Under no circumstances will VideoBrain Computer Co. be liable for any special, incidental, or consequential damages resulting from use or possession of the VideoBrain or its accessories. However, some states do not allow the exclusion or limitation of incidental or consequential damages, so that the above limitations or exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

150 South Wolfe Road
Sunnyvale, California 94086

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