GETTING AROUND IN WORDLAND

LEONARD GORDON
Tucson, Arizona

Over the years, Word Ways has presented several articles on word chains and networks. It was obvious that the networks could be developed into mazes, but I, for one, did nothing about it because I considered mazes kid stuff. However, John Harris sent me a copy of a maze by Robert Abbott that appeared in the May 1991 Discover magazine which is not kid stuff. This prompted me to create a maze in Abbott's style using word chains instead of colors; ana-gram-mar chains seemed most appropriate. In Abbott's mazes there are no dead ends. Instead, the traveler must obey certain rules in going from point to point, or else stay trapped in endless loops (hence his name, Gridlock). I forgot about my maze until, by coincidence, the February 1994 Games magazine published two mazes. One, by Abbott, is simpler than the one in Discover but uses the same principle. Here is my Logomaze:

```
  hair off turn over pipe dream land lady love
rock spring cast stock stand day scape ship chair some
trap hare foot gun hand work yard arm load
door man up shot boat pay grass stick pit some
watch flower pot shell fish head pin under where
stop fire crack hole bill way block tail fall some
back side wise wash board side long horse play
water lick point woman down walk road cock hide how
  ball country country come wind storm away
wheel top up power down out room bird fly ever
house clean line house break house bath house green
```

The way street names join is different from the way words join in a simple rectangular array. There is no beginning or end to the above. Travelers may proceed through an intersection only if the names of the approaching and continuing streets add (in the direction of travel) to a solid (no hyphenation) word, or if the name does not change. Traffic cops have a list of acceptable words taken from Webster's Third International Dictionary. If you get a ticket, but you know the word would be sanctioned by another dictionary, you have to "tell it to the judge". Of the three tours below, only the first is legitimate, but you can take the second if you can persuade him that womanwise (below the line in Webster's Second) is legit, and you can take the third if you can also persuade him of the validity of upcountry (in solid form in

Webster's First).

```
  wash wood long talk door stick chair clean
  wash wood break yard a hand wash wood
  wash wood crack per stand point
```

Here are clean, lady, ship yard, yard, hand gun.

Although there is a possible starting point, there is no maze that has a computer (whose name is in the dictionary) (Artificial Intelligence) repeated in a loop having a total word length of their lengths.

A second line is one that is central on a reversible maze and let me tell you from below:

```
  crack peace spring cast stock are:
  door man up shot boat pay grass stick pit some
  watch flower pot shell fish head pin under where
  stop fire crack hole hill way block tail fall some
  back side wise wash board side long horse play
  water lick point woman down walk road cock hide how
    ball country country come wind storm away
  wheel top up power down out room bird fly ever
  house clean line house break house bath house green
```

Finding:

```
block heel
```

However, for

```
head block shore fire water wind storm away
stock wood break house bath house green
foot gear block heel
```

There are 158 of those.
Articles on works could erris sent in the May instead of Abbott's must obey my trapped about my magazine the one maz-e:

<table>
<thead>
<tr>
<th>-love</th>
<th>-load</th>
<th>-play</th>
<th>-green</th>
</tr>
</thead>
<tbody>
<tr>
<td>-ir some</td>
<td>-at some</td>
<td>-y ever</td>
<td>-y ever</td>
</tr>
<tr>
<td>-where</td>
<td>-do</td>
<td>-ever</td>
<td>-ever</td>
</tr>
</tbody>
</table>

Note that whichever of the above routes we use, we must always circle back through some intersection. This is Abbott's principle. The following is another good example of having to go through a location twice.

**crack.pot.shot.gun.hand.work.yard.stick.pin.grass.work.hand. stand.pipe.dream**

Here are a few more problems for the reader: lady.love to house. clean, lady.love to fly.away, gun.shot to horse.play, gun.boat to ship.yard, hand.gun to hide.away, block.head to watch.man, and hand.gun to gun.hand.

Although not intended, there are a few dead ends and impossible starts in the above maze; I was unable to create a practical maze that used only Webster's Third words. Furthermore, my computer (which was of no use in designing the maze) found that the dictionaries allow paths that I was not initially aware of. (Artificial intelligence?) One might also note that some frags are repeated in the array. I started the design with the intent of having a few streets on which the name was unchanged throughout their lengths, but was unsuccessful.

A second Logomaze, presented below, is constructed along different lines. It contains three concentric ana-gram-mar loops; the central one (intended to model a city traffic circle) contains all reversible words. I filled in radial links more or less haphazardly and let my computer tell me what was there. Many words come from below the line in Webster's Second.

Finding the following path is easy:

**block.head.water.buck.eye.drop.head.block**

However, finding the reverse is not:

**head.block.out.with.take.over.hand.outs.pin.fire.coat.stand.off. shore.fish.berry.bush.tit.lark.spur.money.bag.pipe.line.feed. stock.work.hand.overs.cropl.sick.room.let.table.top.cross.fire.dog. foot.gear.box.thorn.tail.gate.house.break.neck.guard.rail.road. block.head**

There are no fundamental principles involved in these logomazes. Although they bear a superficial resemblance to word meshes (see p 158 of the August 1991 Word Ways), the philosophy is entirely
different. In meshes all routes (down and to the right) are by
definition possible: in logomazes, frags have been chosen and
placed so that travel is difficult, but not impossible.

cross load bird game sick eye water
fire band yard ball crop berry head
dog back work take bush block
foot feed book down tit road
gear line worm mark gold lark rail
box screw wind post man goose guard

The chains used in the above logomazes are called ana-gram-mars
a word introduced by Chris McManus in the November 1990 Word
Ways. (The idea stems from charades.) In May 1991, Ross Eckler
extended this type of chain to networks, and in August 1991, he
and I presented further analysis, using the term directed word
chains. At that time, I began calling the parts of a long word
frags. Although frags need not be words, when I developed some
word meshes in November 1991, I found that for 4-4 splits, only
frags that were common four-letter words were useful. In the above
mazes, all frags were required to be words.

Topologically, the city-street array differs from either the ortho­
gonal array used in meshes, or an isometric (hexagonal cell) ar­
ray. The subject is quite interesting, and I plan to discuss it
in a future article.

One can design Logomazes to have certain topological properties.
The one below solves the "Mailman's Dilemma" - what is the short­
est path he can find to travel all the streets and return to his
starting point?

place work case
kick table house note
thorn ware block
back buck head wood
water cock light
stop horse black worm

The Robert such as g split into
Word Ways, letter word:
backout but
bucksaw by
drawout other
footpad great
headpin here
lockpin lead
packman plan
sellout style
sideway way
walkout work
workbox wax
breakout grassnut
shakeout talesmen

Scot Morr describes m computer. I have
mazes, as com
The Robert Abbott style depends upon the use of reversible words such as gunshot and shotgun. Reversible eight-letter words that split into two four-letter frags were presented in the August 1991 Word Ways. Here are additional seven-letter, eight-letter and nine-letter words, all with uneven splits:

- backout
- backrun
- backsaw
- backset
- backway
- birdman
- blowfly
- blowout
- bucksaw
- burnout
- castoff
- cookout
- dinghee
- downcut
- downset
- downsun
- drawout
- dropout
- ever who
- fallout
- fareway
- firsham
- foldout
- foothot
- footpad
- gallnut
- gangway
- gateway
- handgun
- handoff
- headbox
- headman
- headpin
- headset
- holdout
- holeman
- hoodman
- kickout
- kingpin
- linecut
- lockpin
- lookout
- overall
- overcut
- overfly
- overlay
- overrun
- overset
- packman
- passout
- potshot
- pullout
- railbed
- readout
- rollout
- ropeman
- sellout
- shagrag
- shipboy
- shipman
- shippen
- shotgun
- shutout
- sickbed
- sideline
- spinout
- tailpin
- tak eoff
- takeout
- tiderip
- tramman
- turnout
- walkout
- wardman
- warmups
- washout
- wiseman
- without
- woodbin
- woodbox
- workbox
- workday
- workout
- worktop
- wornout
- breakout
- carryout
- chickpea
- drillman
- flameout
- grasscut
- grassman
- grateman
- headman
- housebug
- lollypop
- pitchout
- shakeout
- shootout
- sidesway
- sparerb
- standout
- stonecat
- tailspin
- talesmen
- tallymen
- throwout
- wardsman
- watchdog
- watchout
- backflash
- backhatch
- backswing
- birdstone
- boathouse
- downthrow
- everwhich
- filmslide
- findfault
- gallstone
- handstone
- headblock
- headlight
- headstamp
- headstone
- headwater
- landreeve
- outsprint
- overbreak
- overcarry
- overcross
- picktooth
- pipemouth
- postwoman
- shipowner
- sidetrack
- slipcover
- warmhouse
- whipstock
- windbreak
- windsstorm
- wingbacks
- wisewoman
- woodblock
- woodhorse
- woodsmoke
- woodstone
- workbench
- workhouse
- workpiece
- worksheet
- Scot Morris, writing in the March 1994 issue of Omni magazine, describes mazes developed by Scott Kim for play on the home computer. I have not seen any of that, but I am sure that Abbott’s mazes, as well as Logomazes, can easily be adapted to the computer.