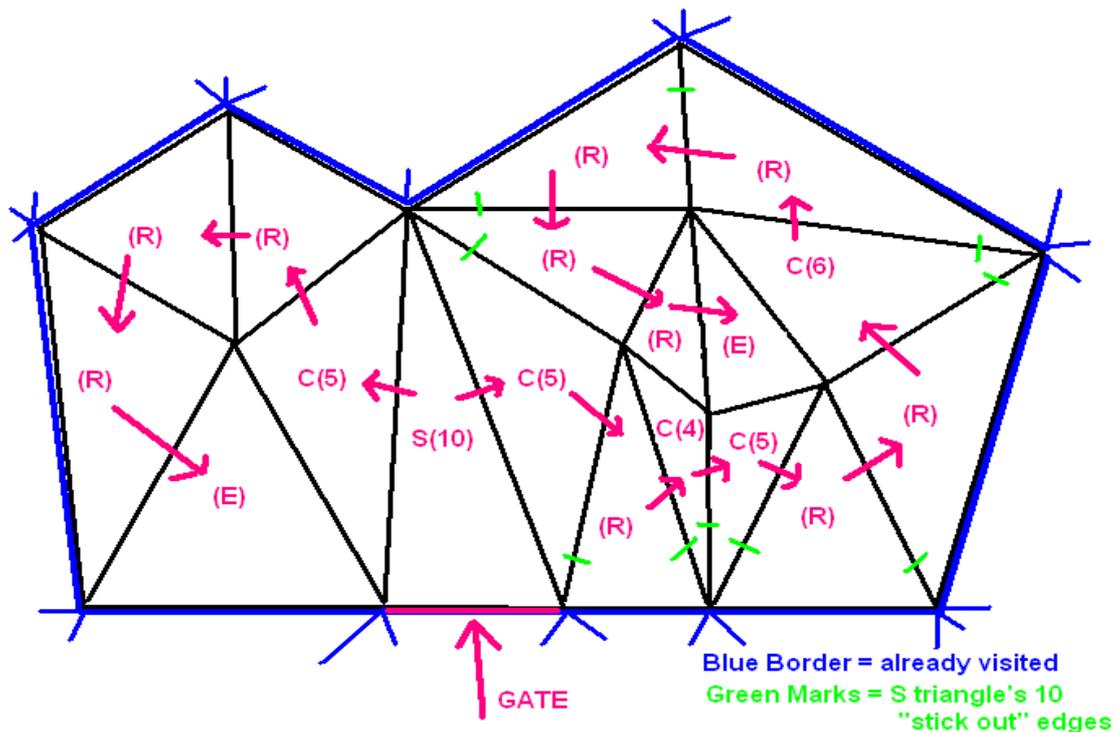


CS 7491 Lecture Notes 3/2/06

Valence-based compression

- Revised Edgebreaker code: C_v (C + valence), S_o (S + offset)
- L, R, E no longer needed
- **Valence** – number of outgoing edges from a vertex
- **Stick-out edge** – edge known to exist (from vertex valence) but not yet traversed (i.e. unprocessed)
- S-offset: instead of number of vertices skipped, count number of “stick-out” edges crossed
- S triangle will know how many “stick-out” edges it has remaining on the other side of the split
- Compressibility of new code depends on distribution of valences but is often very good because regular meshes have most vertex valences = 6

Example:

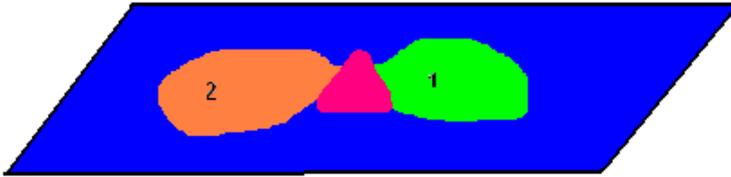


New Encoding: $S_{10} C_5 C_4 C_5 C_6 C_5$

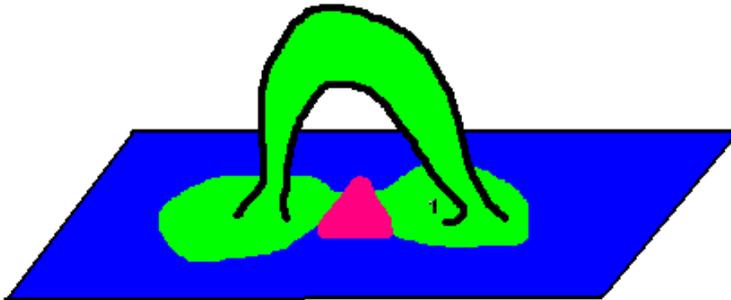
Original Edgebreaker encoding: **S C R C C R R C R R R R R E C R R R E**

Handles

No Handle: S-triangle splits loop and virgin region



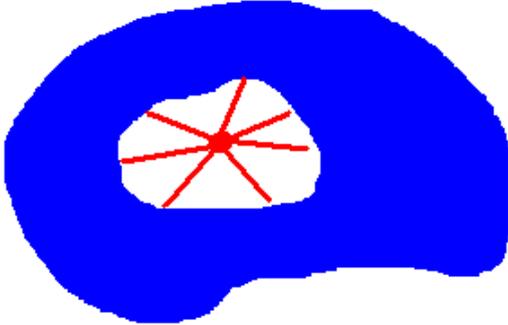
Handle: S-triangle splits loop but not region



Strategy:

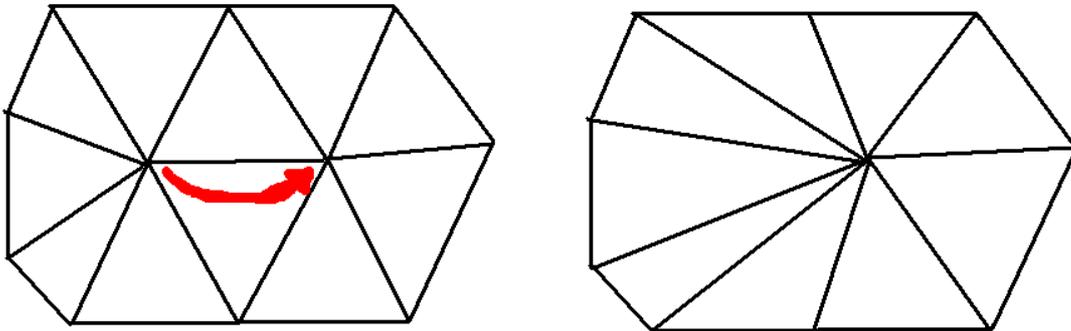
- 1) Assume S
 - 2) Before going left, check if left neighbor triangle has been visited
 - 3) If not visited, no handle, continue
- If visited,
- Call original triangle S^*
 - Encode (c.p, c.p.o)
 - Send these S^* pairs first
 - Decoder uses these pairs to fill in its V/O tables
 - Compression scheme must keep track of the corner IDs the decompressor will use

Holes



- Insert dummy vertices into holes and create triangle fans
- Possible encoding strategy: instead of CCCCCCCR, use H_9 meaning “Hole with 9 triangles”

Simplification



Edge collapse:

- o Representation: Instead of changing V/O tables, add a “parent” column to the vertex table
- o Parent of vertex represents ID of vertex with which it will merge
- o Possible extensions:
 - Arrange V table & geometry table in order of importance
 - Maintain an “ancestor” table to avoid chasing parents of parents of parents
- o Next lecture: how to determine best edge to collapse