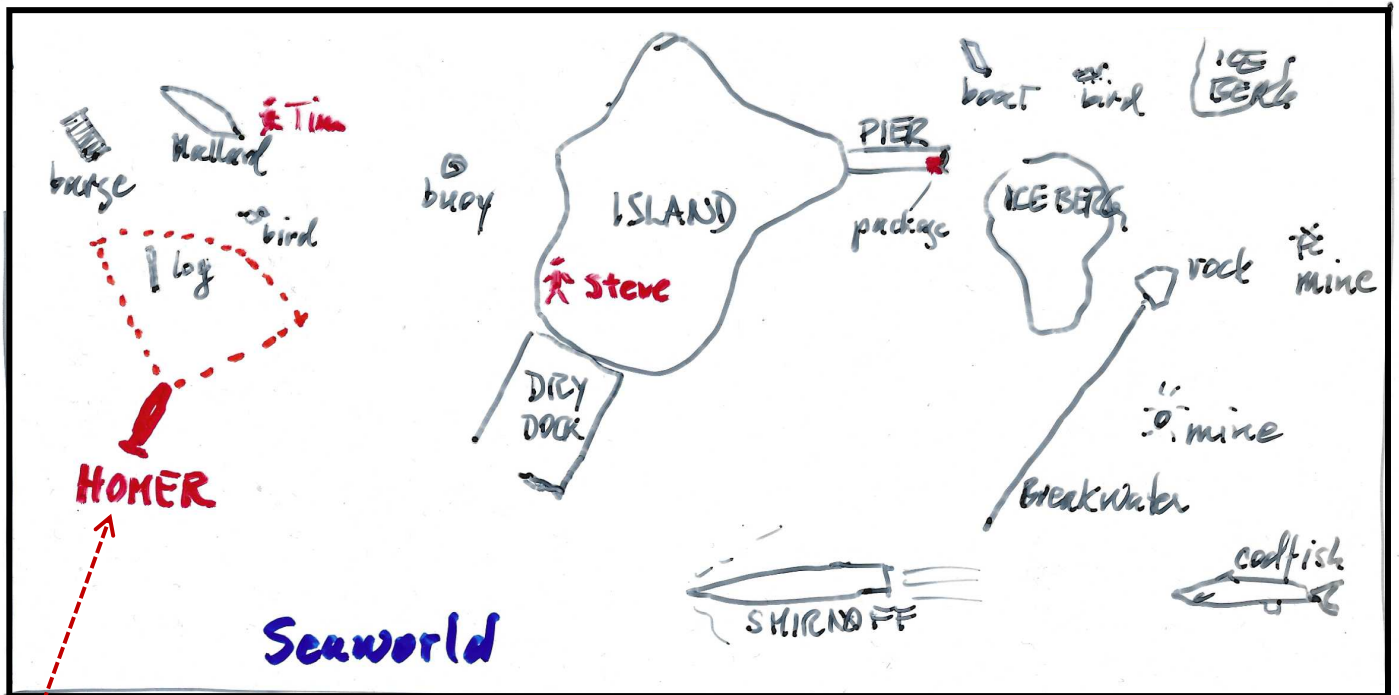


Vere & Bickmore – A Basic Agent (“Homer”)



HOMER agent: a submarine-like being (smaller than a codfish), operating in a "Seaworld" containing an island a dry dock, pier, and fueling station, a couple of icebergs, a submarine patrolling back and forth, a breakwater, and various other, nonmoving objects -- some boats, a barge, some waterbirds, a big codfish, mines, rocks and buoys.

Scenario 2

In this scenario, a package is on the end of the pier, and the agent knows it is there. It also knows the initial location of the barge. This scenario illustrates the interpretation of a temporal reference in a command and the agent's understanding of its future intentions. Initially the agent is neither at the pier nor at the rock.

TIM > Drop the package at the barge next Saturday at 9 p.m.

HOMER > OK.

(Agent plans its future activities, but then takes no immediate action, because the specified time has not arrived.)

TIM > Are you going to be at the pier next Saturday?

HOMER > Yes. (When it picks up the package.)

TIM > Why are you going to go to the pier?

HOMER > I'll go to the pier in order to pick up the package.

TIM > What time are you going to pick it up?

HOMER > 8:56 p.m.

TIM > Where will the package be next Sunday?

HOMER > At the barge.

TIM > Will the package be at the pier a week from now?

HOMER > No.

(The agent starts its "mission" early, using estimated travel and action times, to achieve the goal at the specified time. We now use the mouse to move the barge to a new location and then tell the agent about its new location.)

TIM > The barge is 100 feet north of the rock. (This need only be an approximation.)

HOMER > Oh.

(Agent realizes that this contradicts its previous knowledge of the barge's location and replans. We now accelerate time ahead to about 8:50 p.m. the following Saturday.)

HOMER > I'm going to the package.

HOMER > I've reached it. (An example of a reflective comment, discussed later in the paper.)

HOMER > I'm picking it up (Does it.)

HOMER > I'm going to the barge. (Does it.)

HOMER > I see two birds.

HOMER > I've reached it.

HOMER > I'm dropping the package at the barge. (Does it.)

HOMER > I've left the pier. (Also a reflective comment.)

CAPABILITIES

- Converse (question, instructions, accept info; 800 words)
- "See" & identify objects when encountering them
- Package pickup/delivery
- "Take pictures" of objects
- Plan actions allowing for time constraints)
- Episodic memory (past places, sights, actions), plans (future) memory

IMPORTANT IDEAS

- Temporal planning, e.g., "be at the dry dock tomorrow at noon" (from Vere's 1985 work on DEVISER (for spacecraft planning)
- Action verbs ("go", "give") recognized as closely similar to planning operators (but simpler); e.g., def'n of "give", p.50, using "antecedent" and "consequent"; (But actual planning operators contain details like time & fuel requirements; hard to read.)
- Episodic memory as essential for consciousness (p. 51)
- Recognizes need for summarizing perceptual experience; e.g.,
[(in front of obj --> behind obj) => pass obj],
[(at obj --> not at obj) => reach obj], etc.
- Interpreting adjectives like "large", rel. to expected value range
- "Decathlon" system: end-to-end integration of many capabilities (rather than excelling in selected specialty - see p.88)
- Recognition that imagistic reasoning is required eventually (p. 59)

ISSUES:

- ad hoc symbolic representations
- mixing external with internal (book-keeping) symbolism
- hard to scale up
- no inference except planning
- no initiative, preferences