Sound Symbolism: The re-ascendency of language

"Adam's one task in the Garden had been to invent language, to give each creature and thing its name. In that state of innocence, his tongue had gone straight to the quick of the world. His words had not been merely appended to the things he saw. they had revealed their essences, had literally brought them to life. A thing and its name were interchangeable. After the fall, this was no longer true, Names became detached from things; words devolved into a collection of arbitrary signs; language had been severed from God. The story of the Fall, therefore, not only records the fall of man, but the fall of language."

Paul Auster – "City of Glass" (1985)

Why is the arbitrariness of symbols interesting?

- Untying language to specific articulation patterns allows language be flexible
  - open-ended expression, and acquired conventionality
- Can refer to things that are hard to say, aren't here, and are unlimitedly complex
- Throw away irrelevant properties, focus on formally functional aspects
  - Distillation of language to exactly the aspects that matter
  - de Saussure on signs
  - Newell & Simon on Physical Symbol Systems
  - Allows properly articulated formal accounts of cognition

The power of an arbitrary coding scheme

01000001 01000011 01010100 = ACT

01000011 01000001 01010100 = CAT

01010100 01000001 01000011 =
TAC

Can make a code for anything we throw at it

Generative and systematic

Why is sound symbolism interesting?

- It may well be a mistake to prejudge the matter about what is "relevant" and what counts as a legitimate representation
  - Risk of throwing out the baby with the bath water
  - Constructive induction in AI
  - one-function accounts of evolution limit novelty creation
  - For language, we want evocative, expressive language, so untying formalisms from perceptual-action constraints likely decreases meaningfulness. Smullyan

Evolved tone discrimination FPGA circuits
(Thompson, Layzell, & Zebulum, 1999)

- The power of not prejudging the representation that is relevant for performing a task
  - Richer, physical representations can solve a task that a sparser representation cannot

- FPGA as a physical solution to a tone discrimination task
  - GA Evolved hardware can solve task
  - Pruned functional circuit does not solve task
  - A less constrained notion of "functional" is needed
  - Physical implementations allow new functions to be identified

- Function and meaning can be conferred by aspects deemed irrelevant by a formal account
  - A model can be replicable, rigorous, mechanistic, and quantitative without being formal
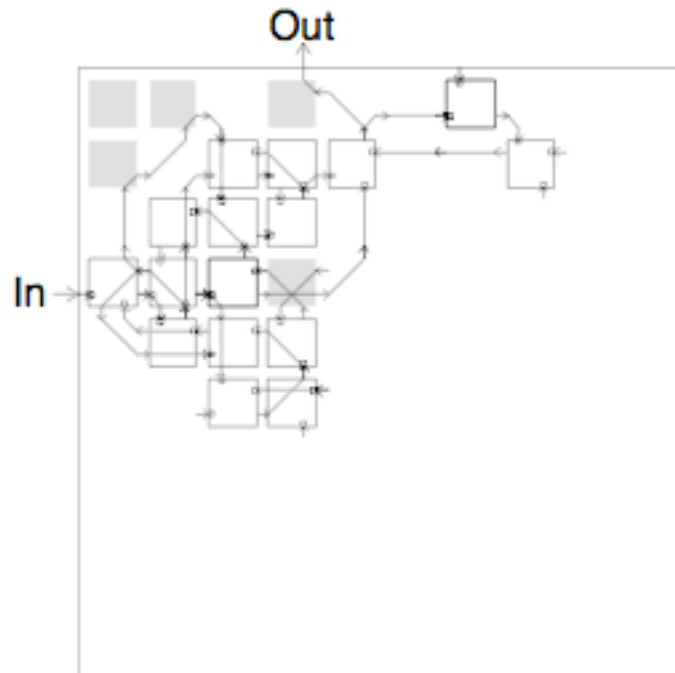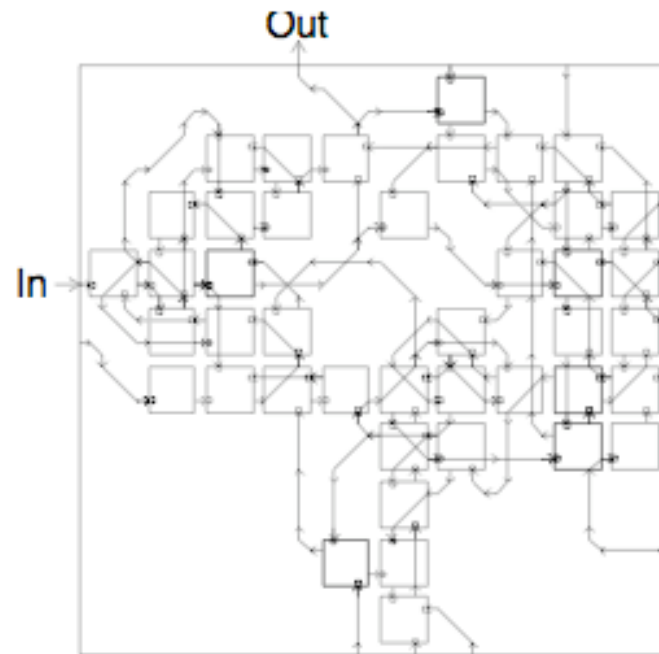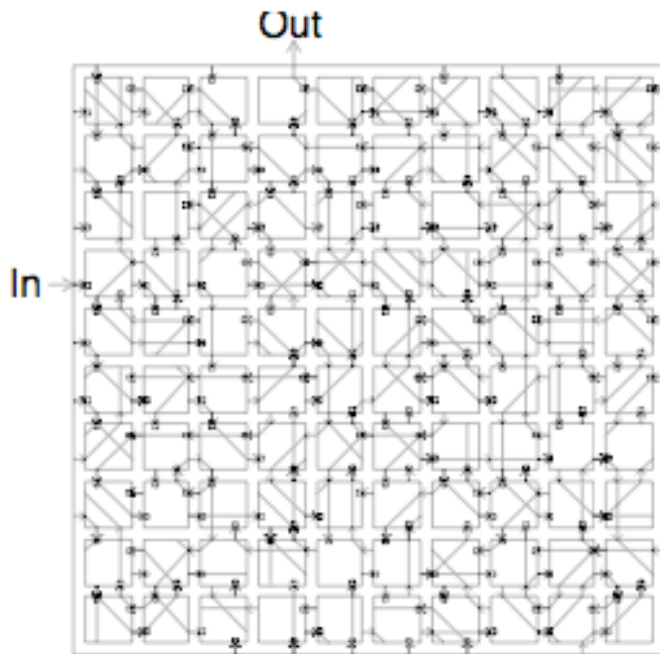
Gray cells are not part of logical circuit, but affect performance of FPGA!

Other points

- Application of large-corpora methods
  - Are there language-wide correlations between semantic similarity and phonological similarity (Christiansen)
  - Identification of specific sound elements with specific semantic elements: size, strength, intensity, repetition, valence, etc.
  - Changes in degree of correlation over time?
- The really subversive implication of sound symbolism is that sound symbolism is itself graded
  - Can't cleanly split form from meaning
  - Can't cleanly split situations where splitting form from meaning is possible from those where it isn't
  - Can't cleanly isolate a region of language where form doesn't have an influence on meaning

Other points

- Does sound symbolism help children learn language?
  - Imai: Sensitivity helps children break the initial barrier to language
  - But may hinder children toward learning arbitrary relations (Uttal)
  - Has language evolved to front-load children's input toward sound symbolic words?

- Using sound symbolism to reveal representational coding strategies
  - Interesting blend between concrete and "abstract" (Maurer; Nusbaum)
  - codes are probably concrete/grounded, but cross-dimensional
  - Mechanisms: Top-down, lateral, or just the same areas (Sathian)