Hume on the Association of Ideas

From *An Inquiry Concerning Human Understanding* (Hume, 1748):

“Though it be too obvious to escape observation that different ideas are connected together, I do not find that any philosopher has attempted to enumerate or class all the principles of association—a subject, however, that seems worthy of curiosity. To me there appear to be only three principles of connection among ideas, namely *Resemblance, Contiguity* in time or place, and *Cause* or *Effect*.”
Cause-Effect

- Requires that a path of implication be established between propositions
- Constraint: “Infer $P$ from the assertion of $S_0$ and $Q$ from the assertion of $S_1$, where normally...”

Result: ... $P \rightarrow Q$.

*Bill was drunk. John hid his car keys.*

Explanation: ... $Q \rightarrow P$.

*John hid Bill’s car keys. He was drunk.*

Violated Expectation: ... $P \rightarrow \neg Q$.

*Bill was drunk, but John didn’t hide his car keys.*

Denial of Preventer: ... $Q \rightarrow \neg P$.

*John hid Bill’s car keys even though he wasn’t drunk.*
Resemblance

Requires that commonalities and contrasts among corresponding sets of parallel properties and entities be recognized.

Parallel: Infer \( p(a_1, a_2, ...) \) from \( S_0 \) and \( p(b_1, b_2, ...) \) from \( S_1 \), where for some property vector \( q, q_i(a_i) \) and \( q_i(b_i) \) for all \( i \).

*John bought an Acura, and Mary bought a BMW.*
Resemblance

**Contrast (i):** Infer $p(a_1, a_2, \ldots)$ from $S_0$ and $\neg p(b_1, b_2, \ldots)$ from $S_1$, where for some property vector $q$, $q_i(a_i)$ and $q_i(b_i)$ for all $i$.

*John bought an Acura, but Mary bought a BMW.*

**Contrast (ii):** Infer $p(a_1, a_2, \ldots)$ from $S_0$ and $p(b_1, b_2, \ldots)$ from $S_1$, where for some property vector $q$, $q_i(a_i)$ and $\neg q_i(b_i)$ for some $i$.

*John drives an Acura, but Mary drives a Miata.*
**Resemblance**

**Exemplification:** Infer \( p(a_1, a_2, \ldots) \) from the assertion of \( S_0 \) and \( p(b_1, b_2, \ldots) \) from the assertion of \( S_1 \), where \( b_i \) is a member or subset of \( a_i \) for some \( i \).

*Young men often buy sports cars. John bought a Miata.*

**Generalization:** Infer \( p(a_1, a_2, \ldots) \) from the assertion of \( S_0 \) and \( p(b_1, b_2, \ldots) \) from the assertion of \( S_1 \), where \( a_i \) is a member or subset of \( b_i \) for some \( i \).

*John bought a Miata. Young men often buy sports cars.*
Resemblance

**Exception (i):** Infer $p(a_1, a_2, ...)$ from the assertion of $S_0$ and $\neg p(b_1, b_2, ...)$ from the assertion of $S_1$, where $b_i$ is a member or subset of $a_i$ for some $i$.

*Young men often buy sports cars. However, John bought a Yugo.*

**Exception (ii):** Infer $p(a_1, a_2, ...)$ from the assertion of $S_0$ and $\neg p(b_1, b_2, ...)$ from the assertion of $S_1$, where $a_i$ is a member or subset of $b_i$ for some $i$.

*John bought a Yugo. Nonetheless, young men often buy sports cars.*
Elaboration: Infer $p(a_1, a_2, ...)$ from the assertions of $S_0$ and $S_1$.

John bought an Acura this weekend. He purchased a beautiful new Integra for 20 thousand dollars at Bill’s dealership on Saturday afternoon.
Contiguity

Occasion:

(a) A change of state can be inferred from the assertion of $S_0$, whose final state can be inferred from $S_1$, or
(b) a change of state can be inferred from the assertion of $S_1$, whose initial state can be inferred from $S_0$.

John bought an Acura. He drove to the ballgame.

More than just temporal progression:

At 5:00 a train arrived in Chicago. At 6:00 George Bush held a press conference.
Contiguity

**Figure-Ground:** Infer from $S_0$ a description of a system of entities and relations, and infer from $S_1$ that some entity is placed or moves against that system as a background.

*It was a bright and sunny day in Chicago. At 5:00 a train arrived. At 6:00 George Bush held a press conference.*
Coherence vs. Cohesion

- Discourse *cohesion*: tendency for discourses to contain *cohesive devices* – like pronouns, ellipses, and connectives – which ‘tie’ different parts of a discourse together.

- But cohesion is neither a necessary nor sufficient constraint on discourses:

  *George W. Bush once owned a baseball team. He appointed Christine Todd Whitman to head the EPA.*

  *At 5:00 a train arrived in Chicago. At 6:00 George Bush held a press conference.*
Connectives

- Often, connectives are used to relate clauses — and, but, because, even though
- Connectives may constrain the connection between clauses to a single relation, but not always

(1) John hid Bill’s car keys because he was drunk. (Explanation)

(2) a. John bought an Acura and Bill leased a BMW. (Parallel)
   b. John bought an Acura and drove to the ballgame. (Occasion)
   c. John bought an Acura and his father went ballistic. (Result)
Connectives

• However, *and* is not compatible with Explanation

(3) John hid Bill’s car keys and he was drunk.

• Importantly, however, connectives do not create coherence:

(4) a. ?? John hid Bill’s car keys. He likes spinach.
   
   b. ?? John hid Bill’s car keys because he likes spinach.