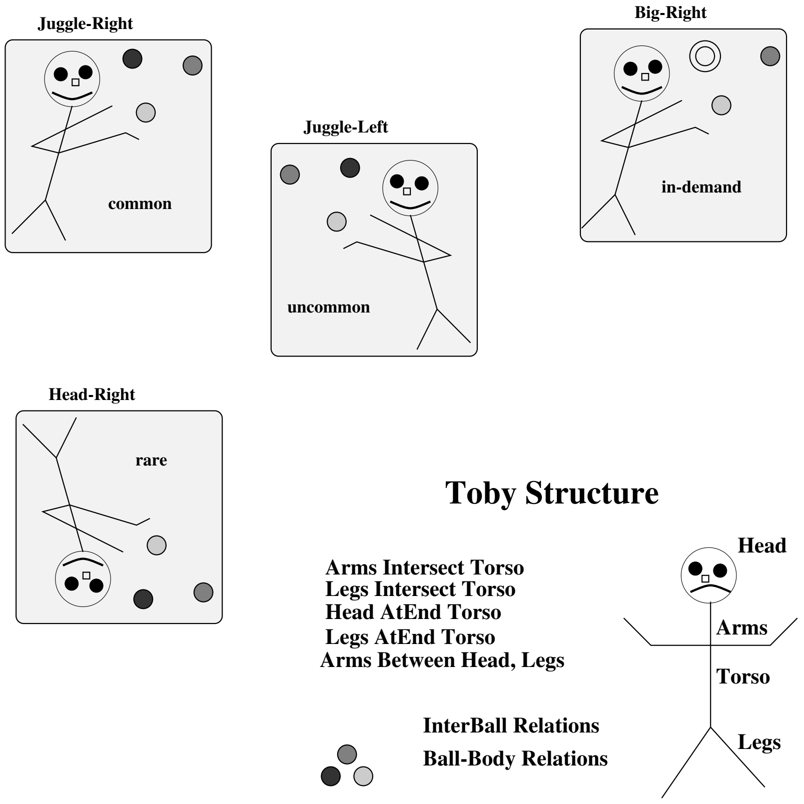
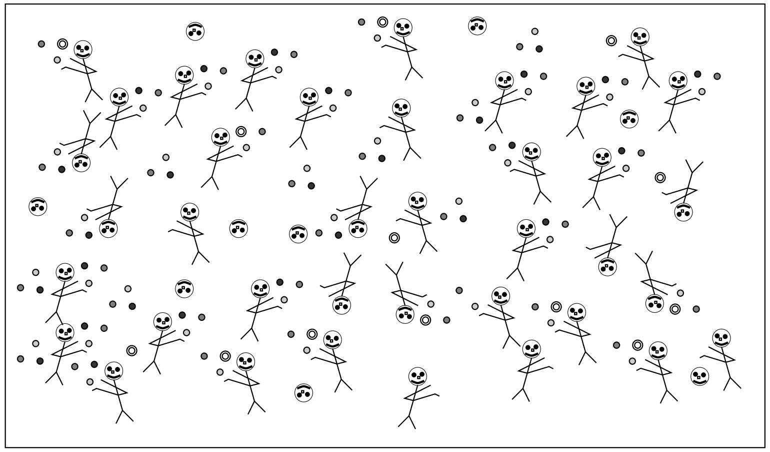
Where Is Toby ?

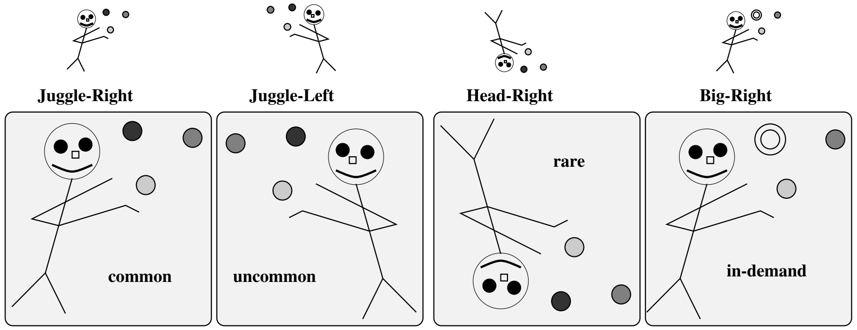
1. Recognizing Patterns in Unstructured Sources
2. Add Some Structure
3. Exploiting Structure
4. Hey, Source Code Has Structure!
5. What Else ?
6. Uh Oh.

Toby, Our Juggler



Higgeldy Piggeldy JugglerWorld





Haphazard Recognition 1

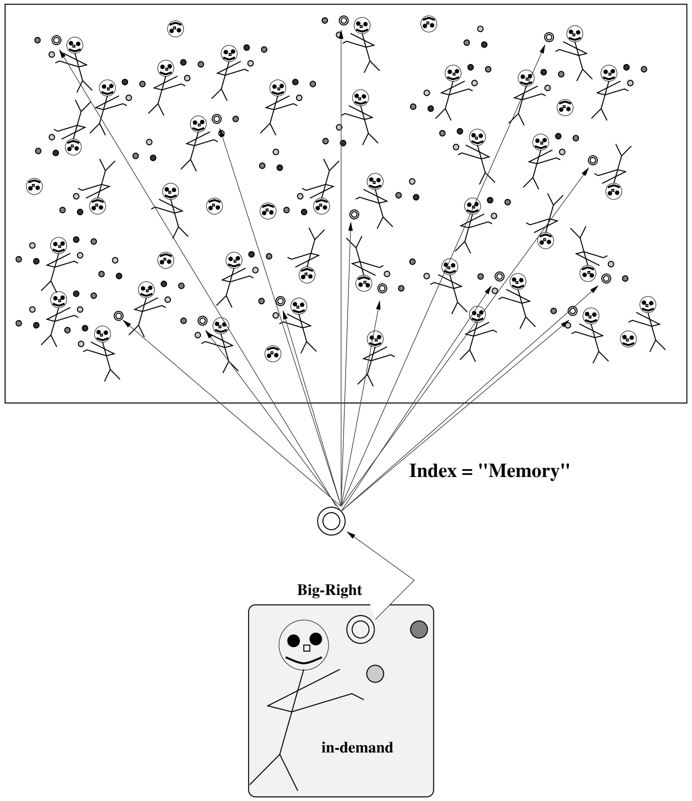


Figure 1: Weak Infer Structure; Locality; Index = Memory

Haphazard Recognition 2

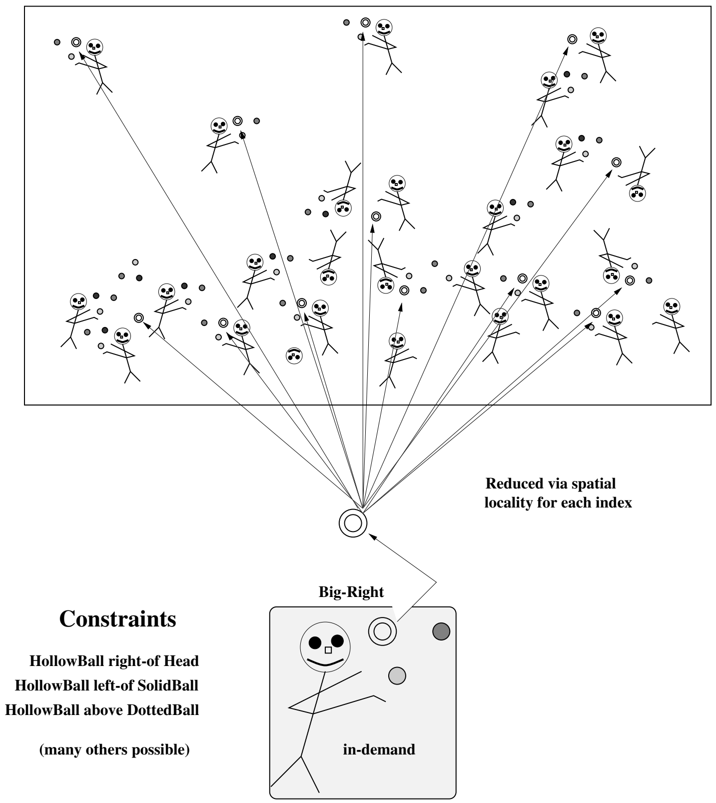


Figure 2: Locality Helps Toby Grab Attention.

Haphazard Recognition 3

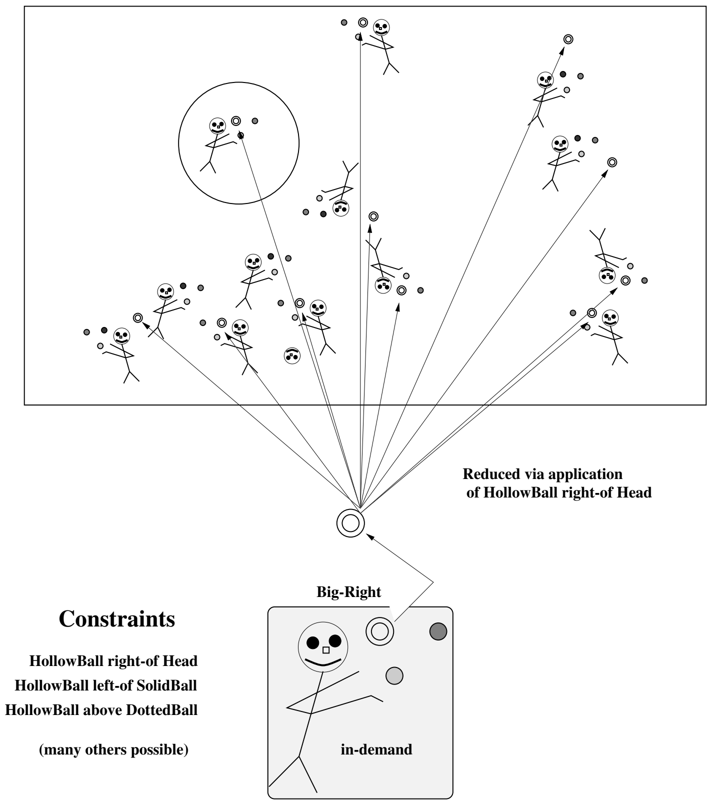


Figure 3: Toby Stands Out!.

Structure in JugglerWorld

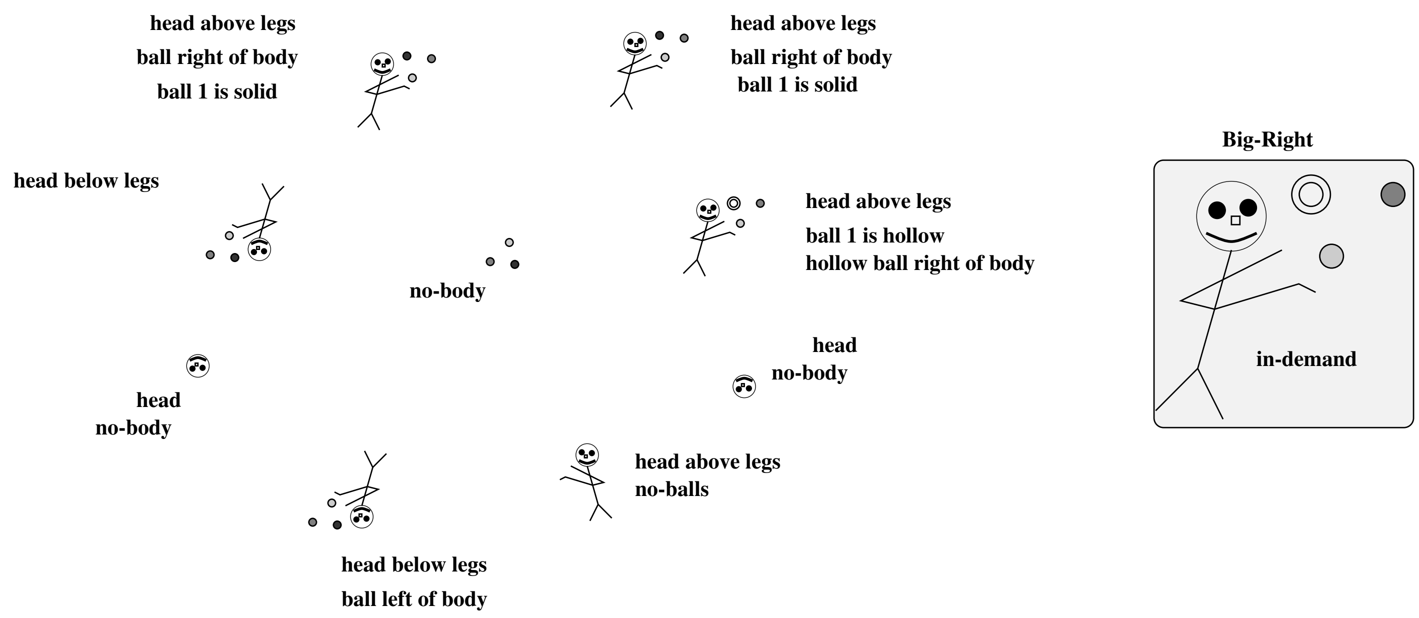


Figure 4: Structure Pre-Exists in JugglerWorld.

- Limits Range of Potential Relationships Dramatically, Cleanly
- Structure plus a *Strong* Template Gives Easy Solutions

Recognizing Structure

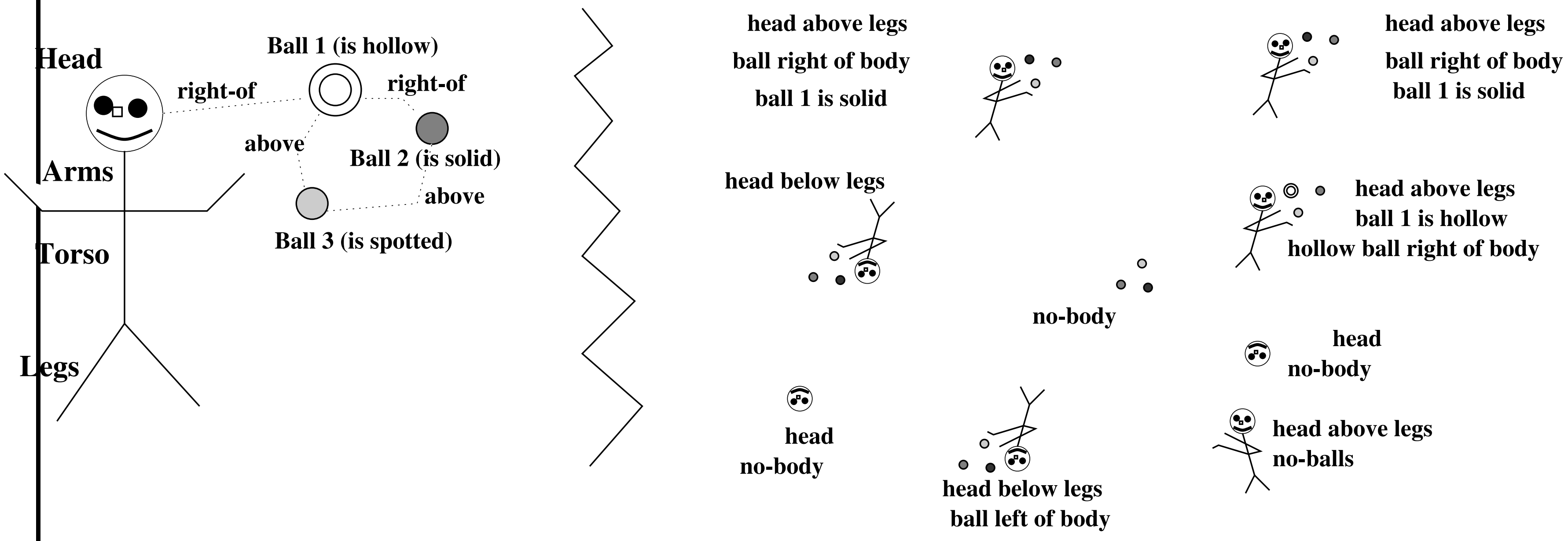


Figure 5:

- Relational Correspondences in Addition to Element
- Can Exploit Known “Keys” (Hollow Ball Right of Head)

Recognizing Structure

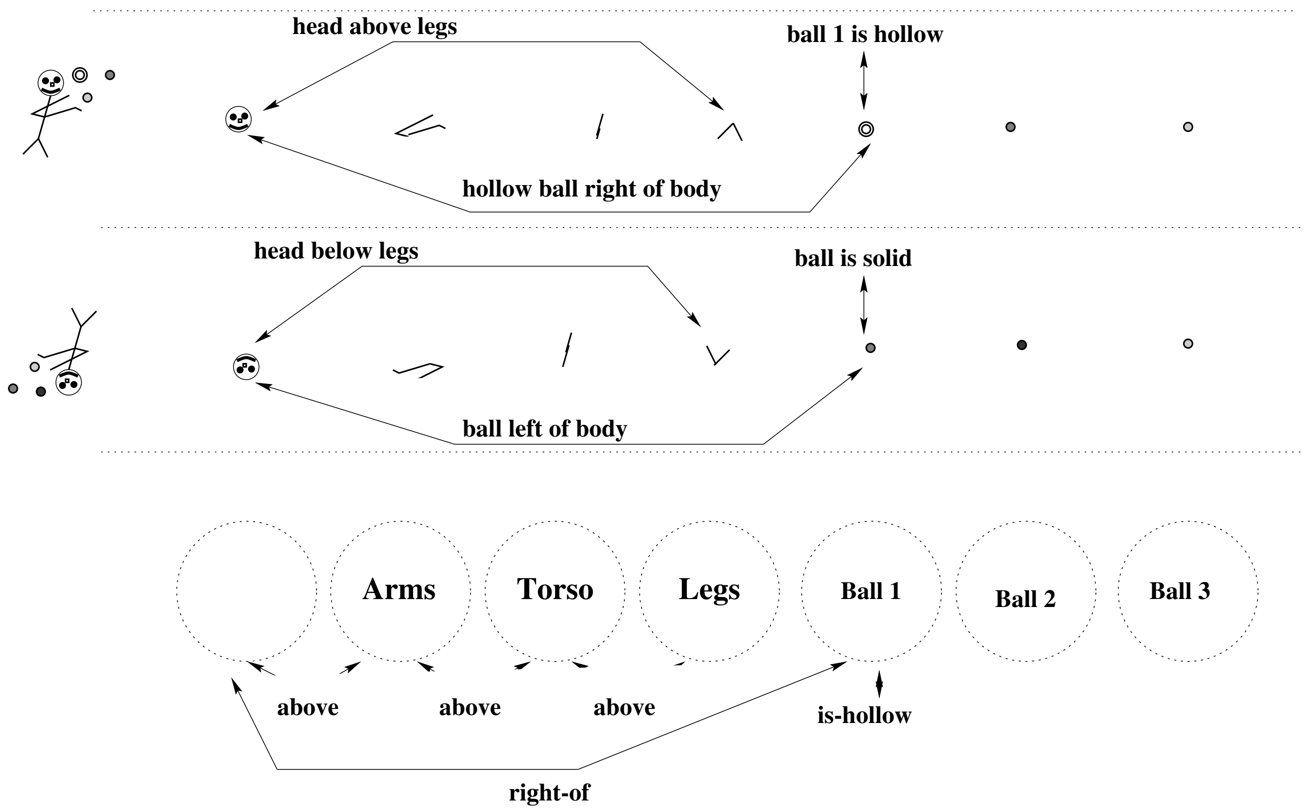


Figure 6: Hey It Matches !

Source Code (At Last)

- Source code constraints such as data-flow extractable, exploitable
- Is Source Code Structured ... Enough ?
- Where Do Templates Come From ? (Exemplars)
- Are Templates *Too* Specific ? (Expert Abstracted)
- But ... Database Queries are Easy! (It's Structure Stupid)

What Else : Related Work

- This Mess is NP-Hard, Surprised ? (No)
- Can We Exploit Hierarchical Data in CSPs ? (Yes)
- Is this Plan Recognition ? (Maybe)
- Does this Really Work ? (Uh ... Sure)

Recognize This ?

Figure 7: Oh oh ... get an expert !

The Output : Believe It.

On the first day of Christmas my true love gave to me a partridge in a pear tree.

On the second day of Christmas my true love gave to me two turtle doves and a partridge in a pear tree.

On the third day of Christmas my true love gave to me three french hens, two turtle doves and a partridge in a pear tree.

... the whole damn thing, no kidding.

Toby in JugglerWorld

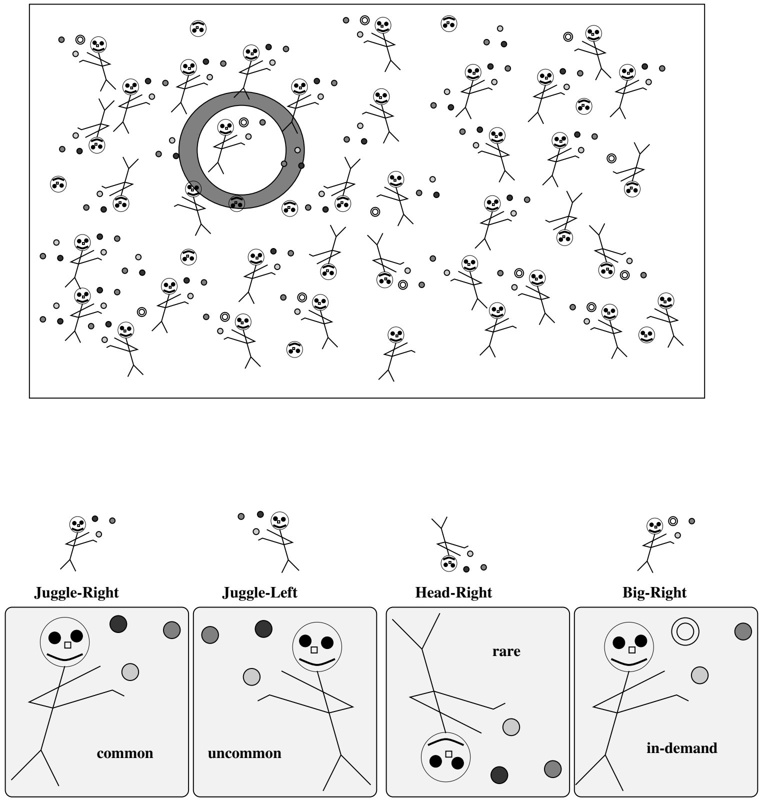


Figure 8: Stands Out in a Sea of Talent!