NOOS
(Arcos & Plaza 1996)

- A language for uniform representation of problem solving methods and domain knowledge. (*Uniform* means that both methods, concepts, and meta-knowledge are “first-class” values)

- Motivation: Reuse and combination of components, Integration of different problem solving methods.

- Constructs: Entities (= objects, concepts) with features (= attributes, slots). Methods are entities. Some entities are refinements of others. Some entities are meta-entities referring to others.
Is it a description logic? (see example)

- What exactly is a description logic? 1st chapter of The Description Logic Handbook doesn't say what is not a description logic.

- Difference between NOOS and typical description logics:
  - NOOS has “methods”.
  - NOOS has “refinement” (= OO inheritance?)

- What are the consequences of this in terms of soundness, completeness, computational complexity, expressiveness? (Articles doesn't say. I wonder, but haven't the time to sit down and do the math myself.)
Noos vs OO programming languages

- NOOS = A DL with OO-like extensions?
- NOOS = A OO programming language with a restricted feature set?
- Why not just write a class library for a general purpose OO programming language like Java?
Inference

- A query is normally a question for the value of a feature. Inference proceeds lazily by computing the feature values that are needed.

- To compute a feature value, there are three possibilities:
  - Value given directly
  - Value given by a constraint
  - Value calculated by a method

Reflection

- = Reasoning about reasoning methods

- In NOOS: Methods for choosing methods, given in meta-concepts (level+1)
Evaluation

- The paper “Inference and reflection in the object-centered representation language Noos” doesn't really make any clear claims as to the properties of Noos. There are no theorems or empirical results, just definitions, examples and informal description.

- The paper “Integrating Induction in a case-based reasoner” (Armengol & Plaza 1994) describes an application of Noos for choosing methods for protein purification. There is one numerical result, but it is hard to interpret what it means. The conclusion gives no conclusion except “We have shown that meta-knowledge can be incorporated in the form of an oracle that selects the most adequate method for every case to be solved.”

- The website [http://www.iiia.csic.es/Projects/Noos.html](http://www.iiia.csic.es/Projects/Noos.html) says that the Noos manual is not yet available. Using the Wayback machine, I found that this was the case in 1997 as well.