Building OWL Ontologies with Protege

CS 431 – April 10, 2006

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Protégé and RACER – tools for building, manipulating and reasoning over ontologies

- Protégé - http://protege.stanford.edu/
  - Use the 3.2 version
  - Multiple plug-ins are available
- Protégé OWL plug-in
  - http://protege.stanford.edu/plugins/owl/
- Other semantic web related plug-ins
  - http://protege.cim3.net/cgi-bin/wiki.pl?ProtegePluginsLibraryByTopic#nid349
- Racer
  - Description Logic based reasoning engine
  - Server-based
  - Integrates with Protégé-OWL

A Practical Guide To Building OWL Ontologies Using The Protégé-OWL Plugin and CO-ODE Tools Edition 1.0

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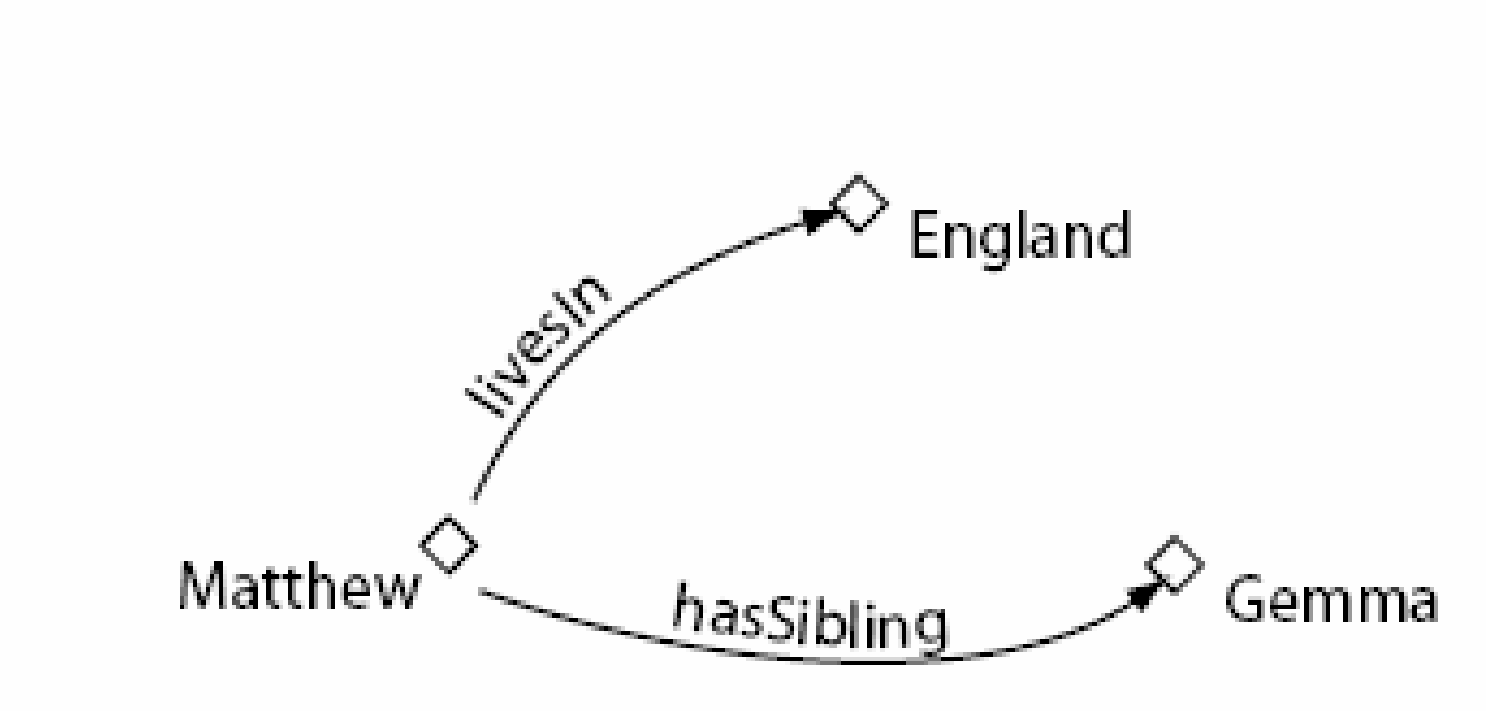
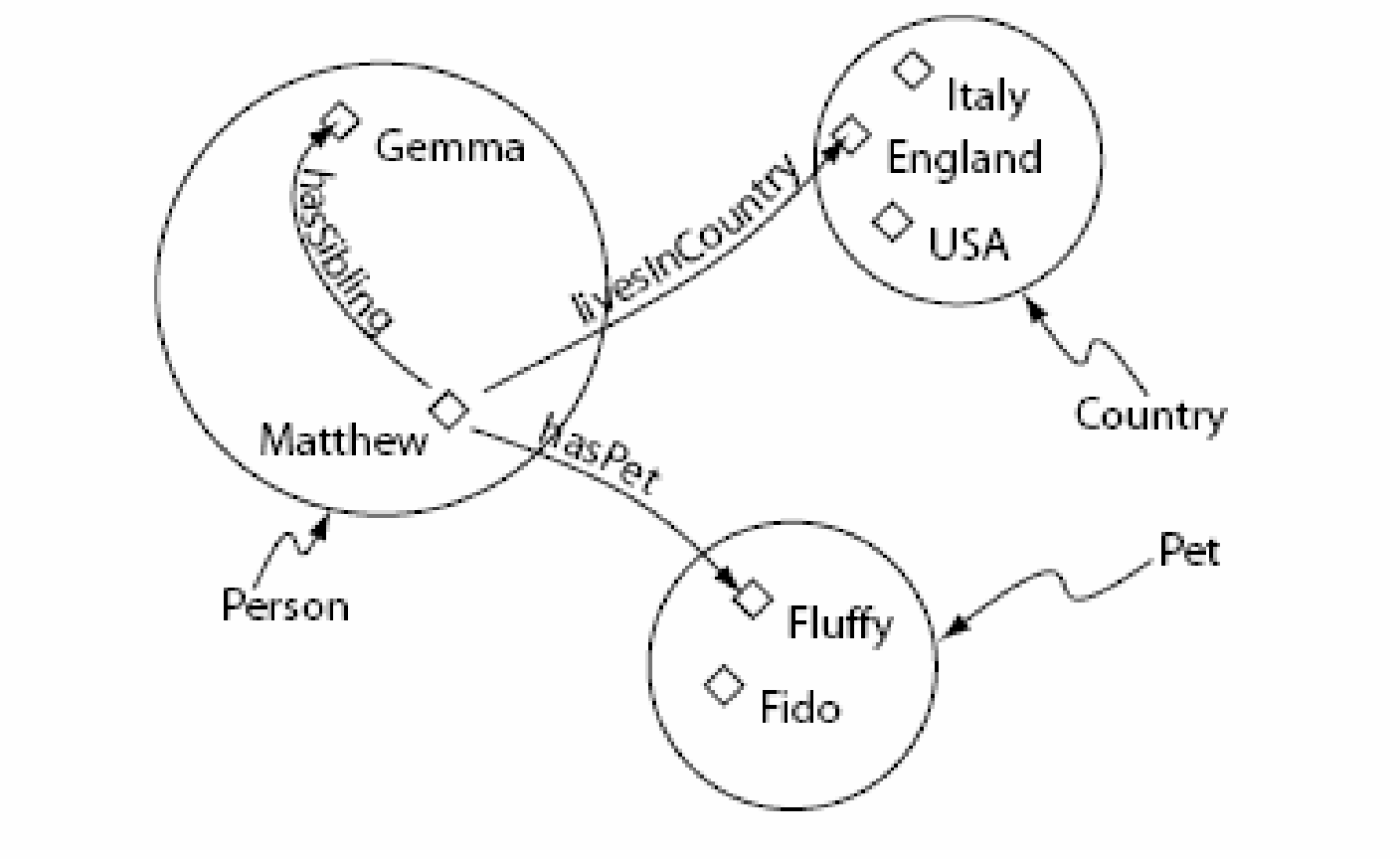
http://www.co-ode.org/resources/tutorials/ProtegeOWLTutorial.pdf

Individuals

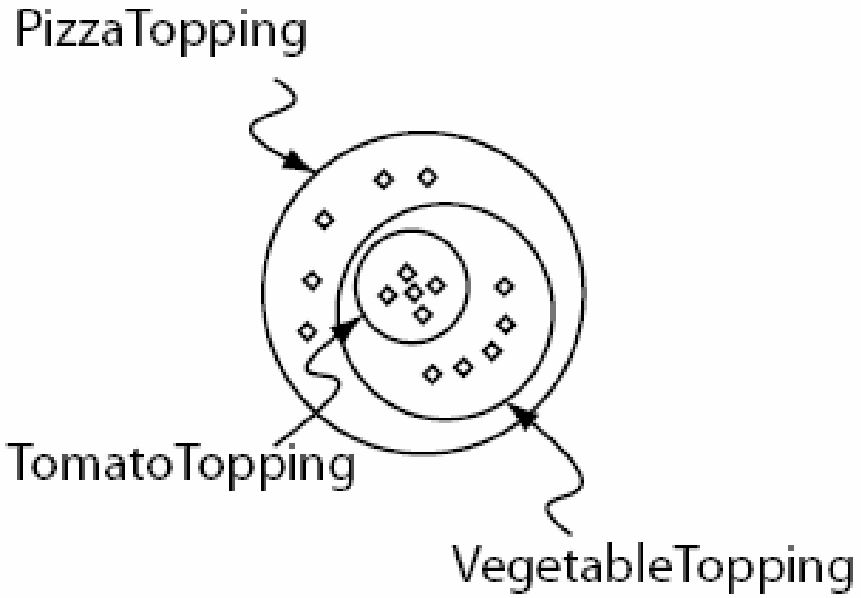
Properties among Individuals



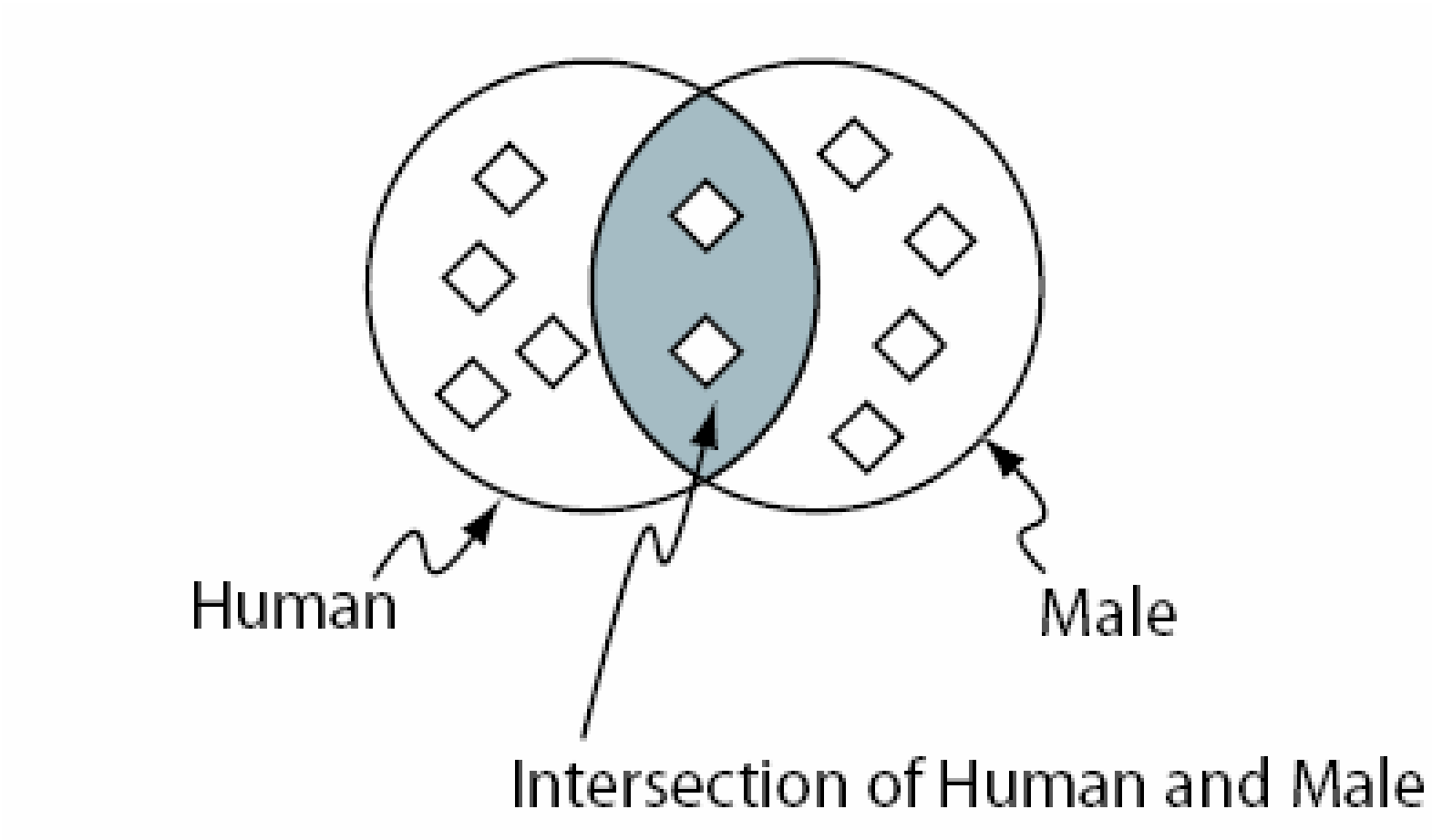
Classes, Properties, and Individuals



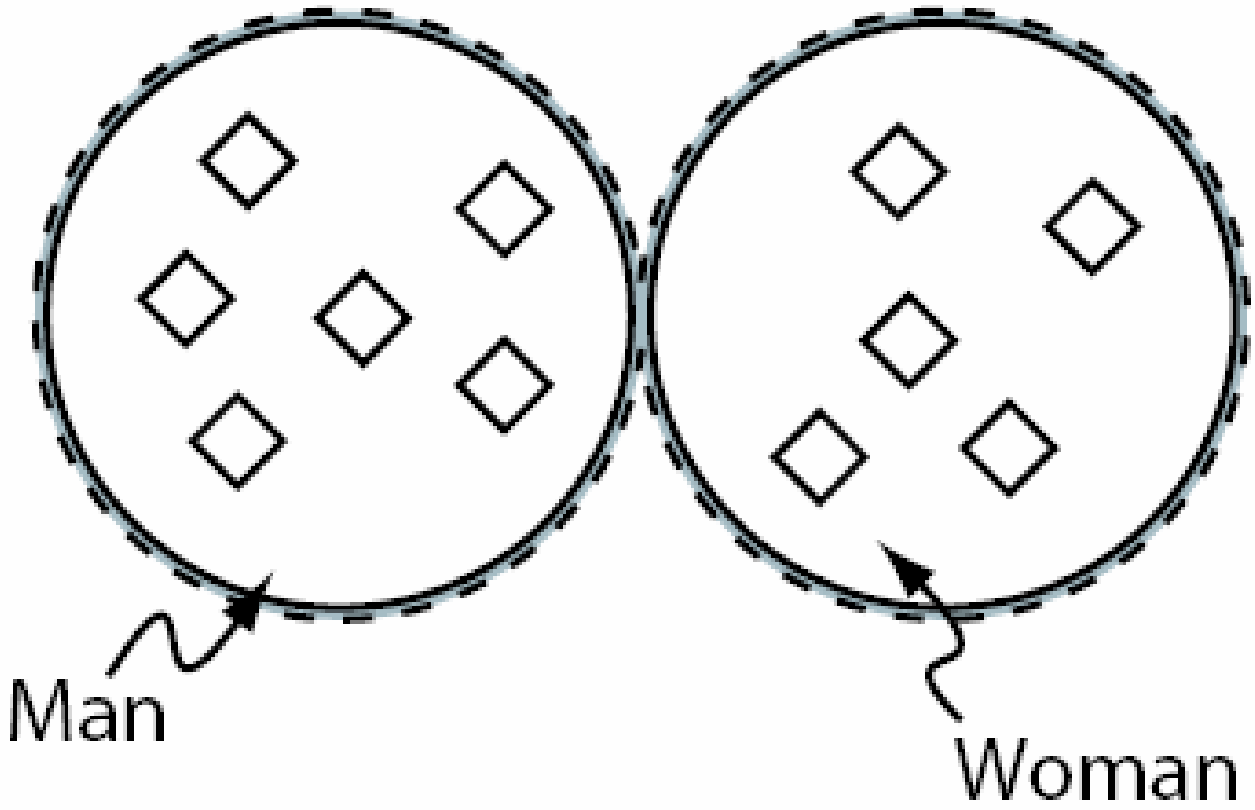
Sub-Classing



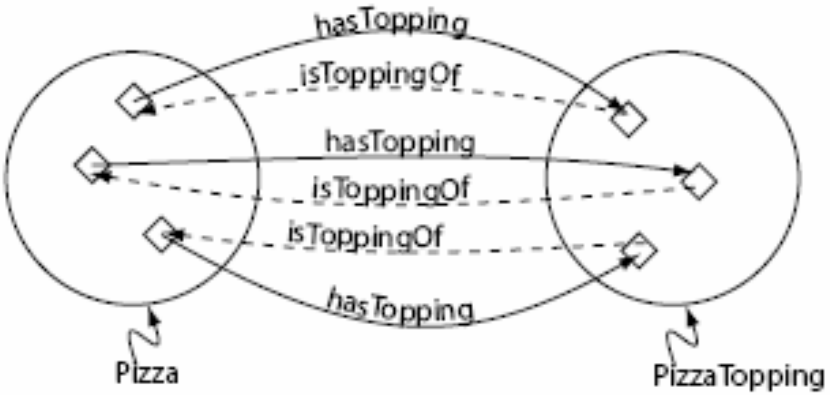
Class Intersection



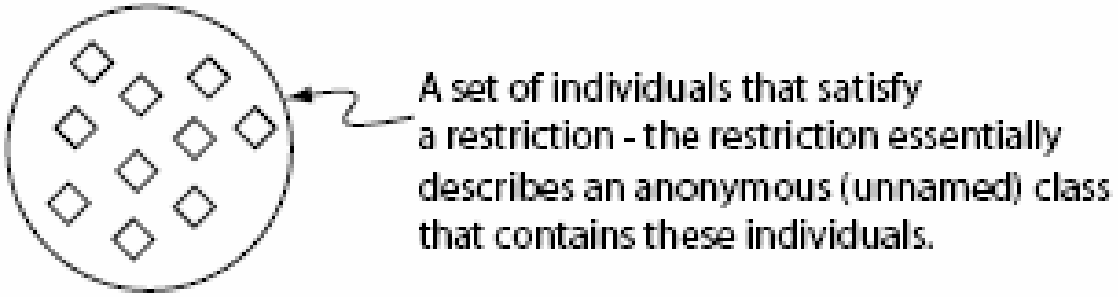
Class Union



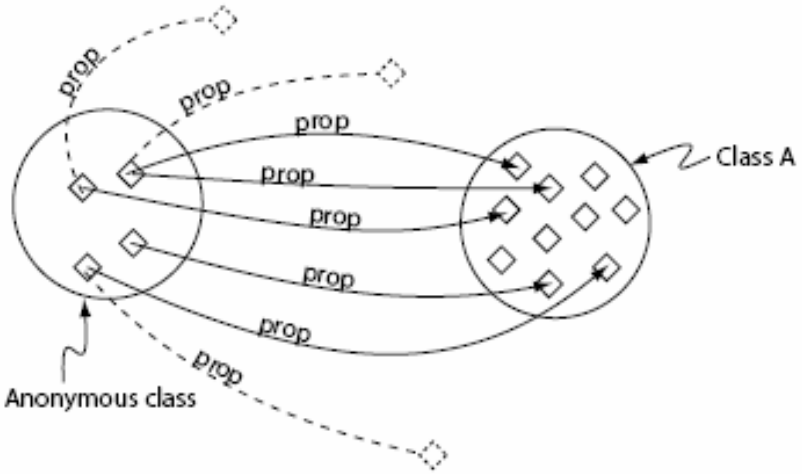
Domain and Range Constraints

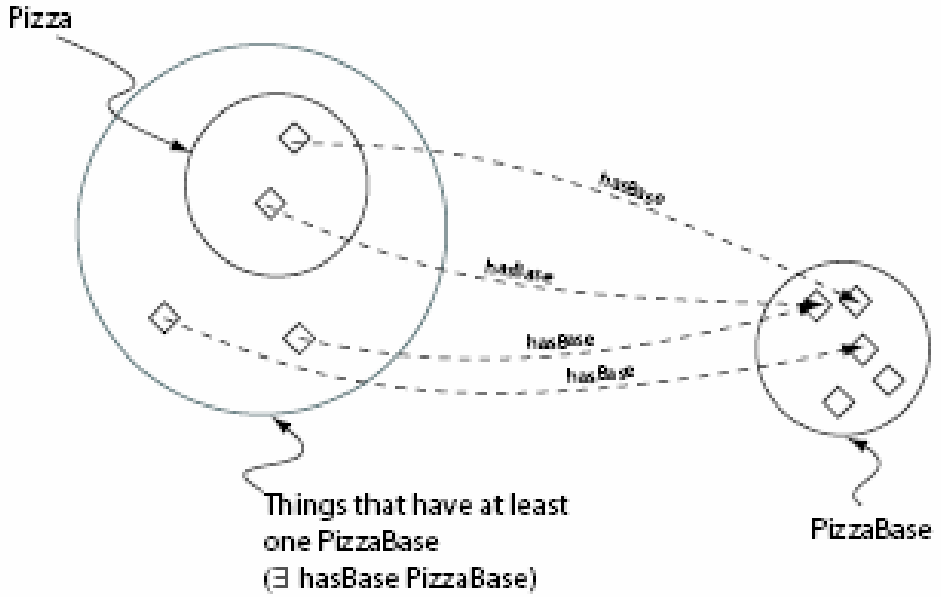


Quantifier Restrictions

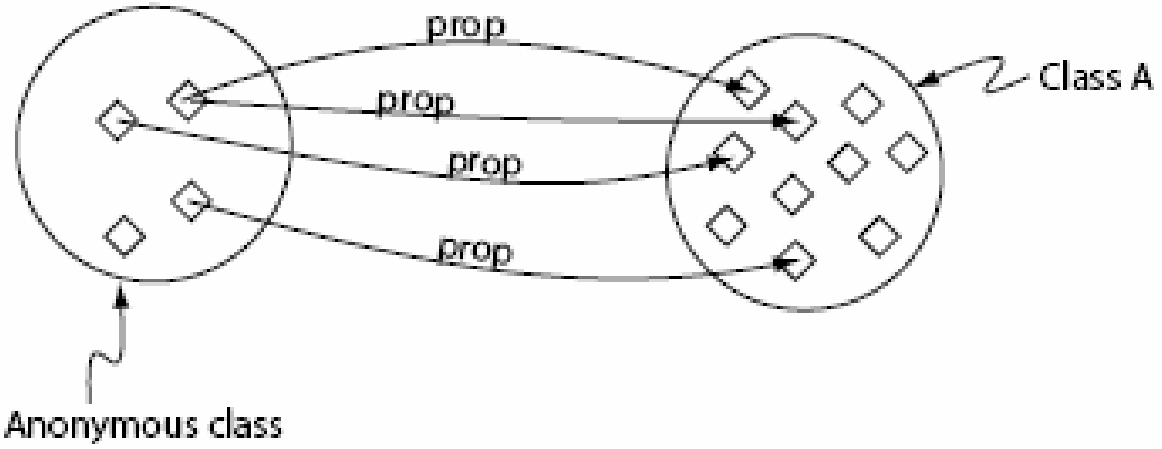


Existential Restriction

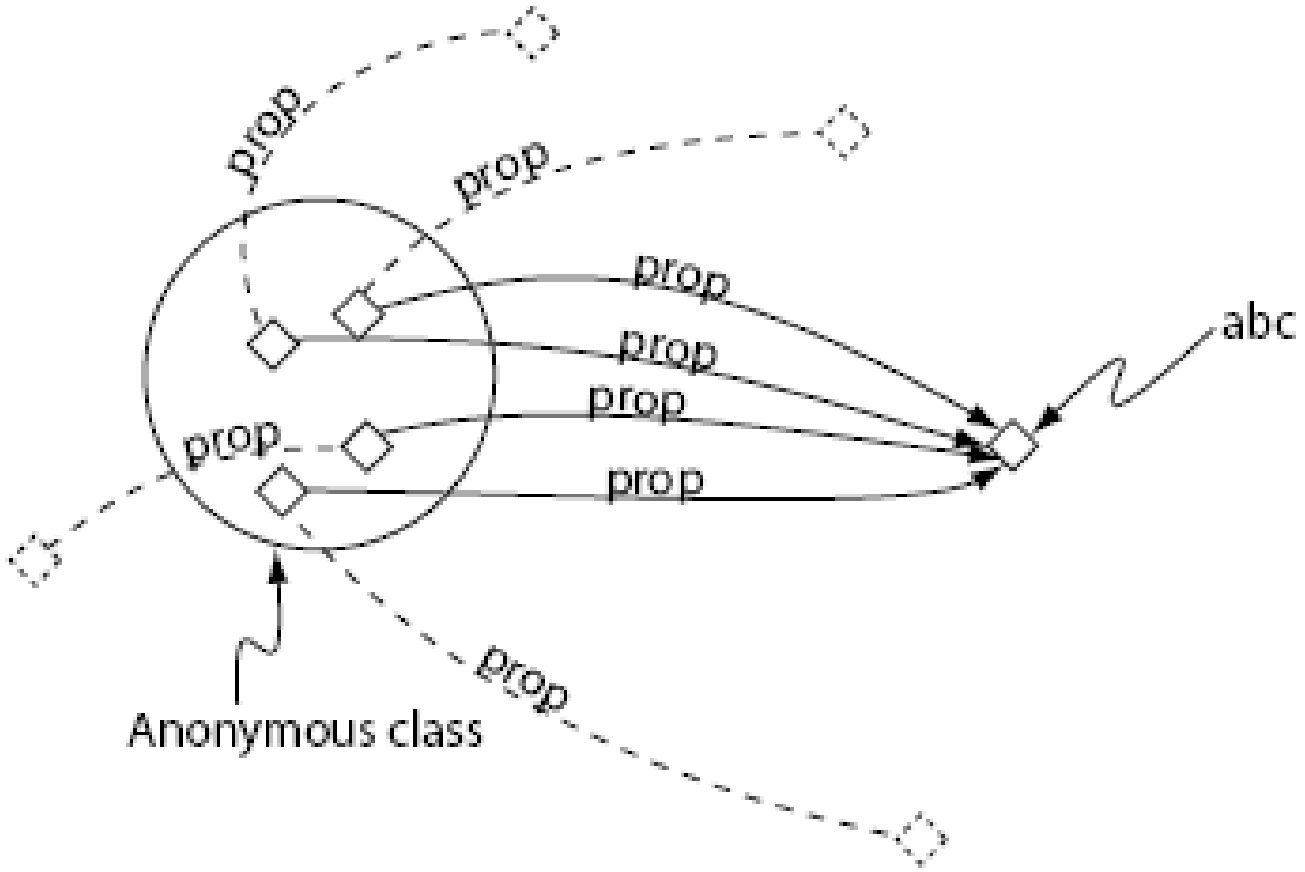




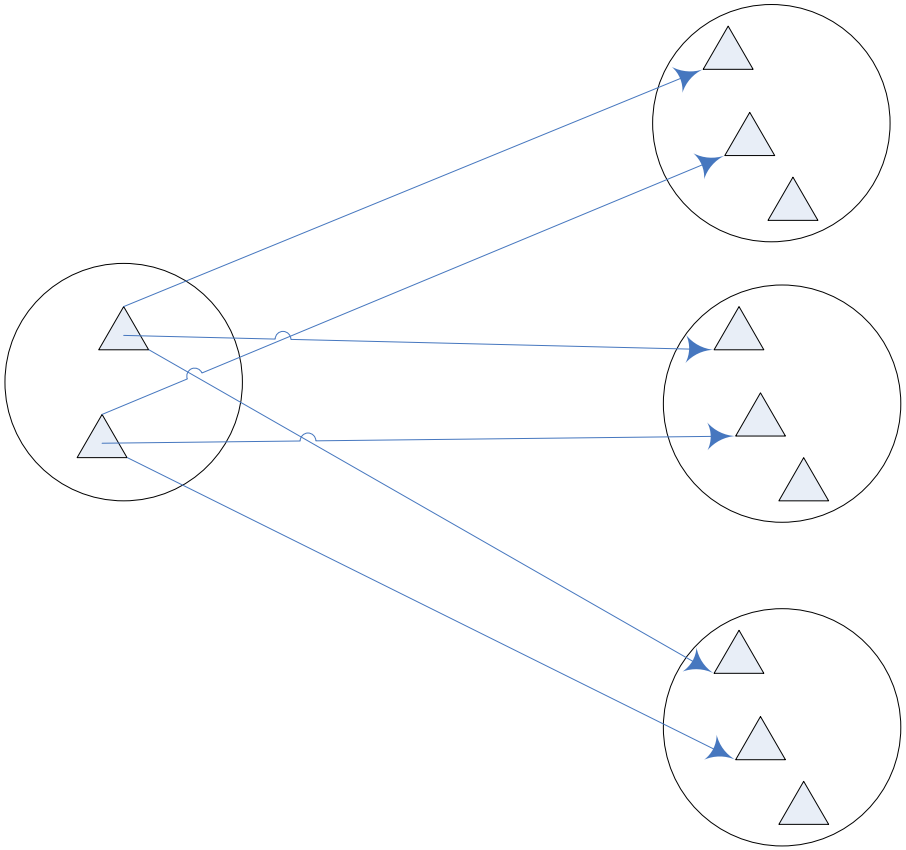
Universal Restriction



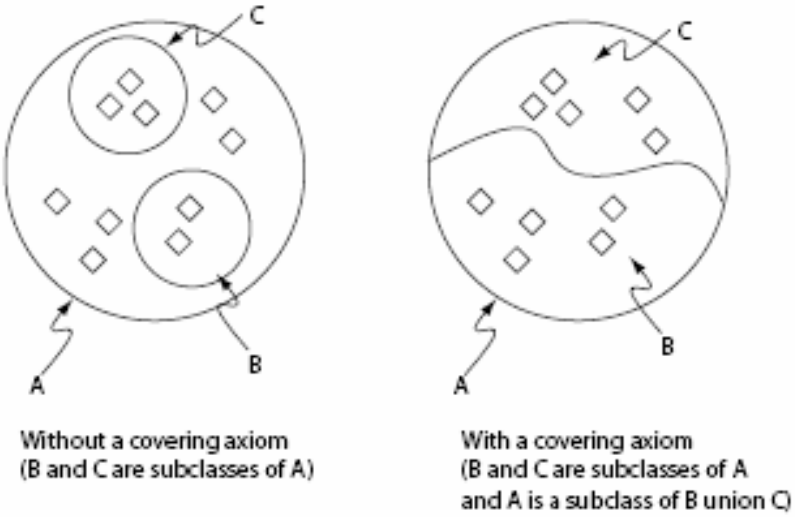
Has Value Restriction



Closure Axiom



Covering Axiom



Without a covering axiom
(B and C are subclasses of A)

With a covering axiom
(B and C are subclasses of A
and A is a subclass of B union C)

Necessary and Sufficient Conditions

- *Necessary Conditions:* If something is a member of this class it is necessary to fulfill these conditions
  - if class member then meets condition
- *Necessary and Sufficient Conditions:* If something fulfills these conditions then it *must* be a member of this class
  - if class member then meets condition
  - if meets condition then class member
- *Primitive Class:* only has *necessary* conditions.
- *Defined Class*: has at least one set of *necessary and sufficient* conditions.