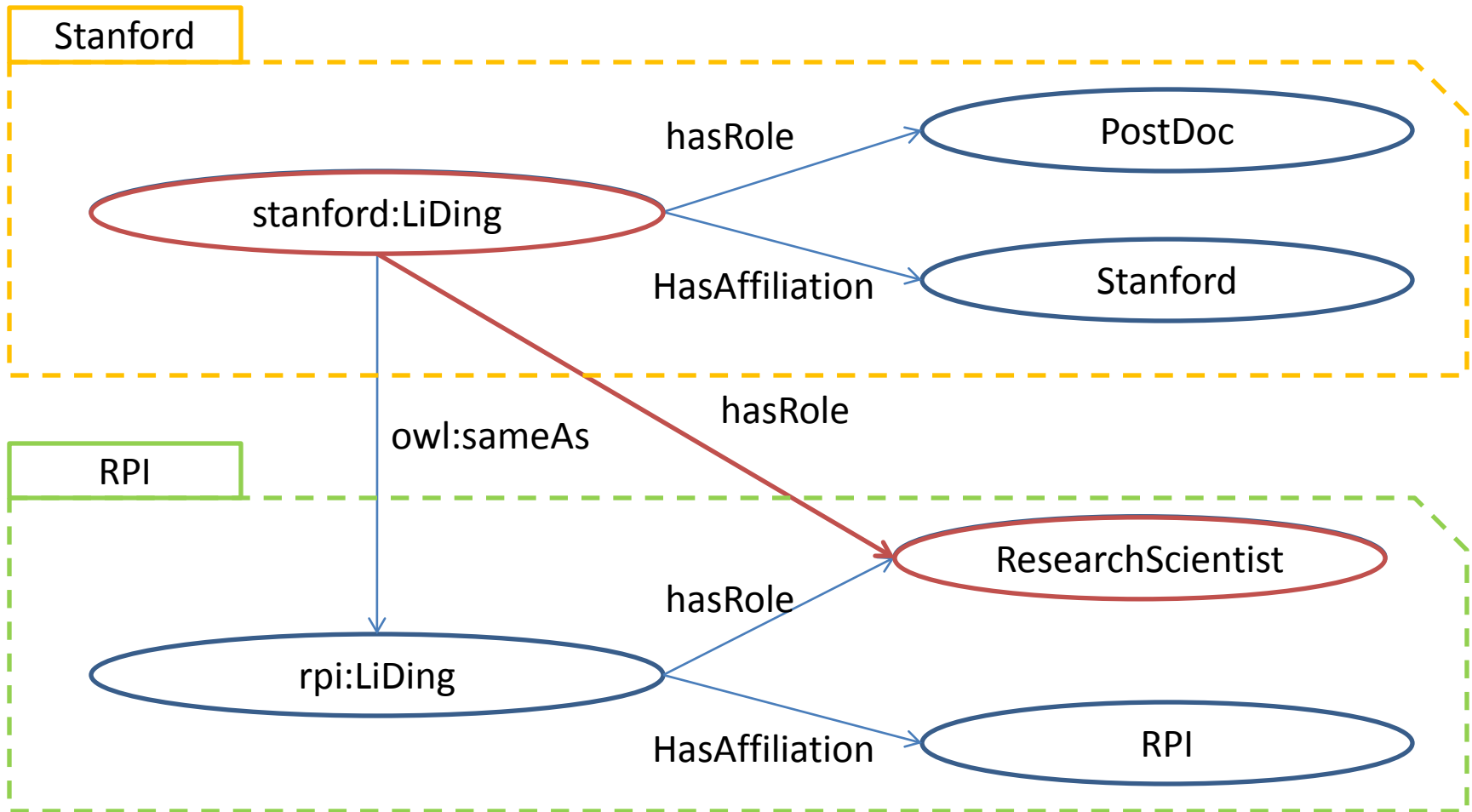# Contexts and Importing in RDF

Jie Bao, Li Ding, and Deborah L. McGuinness
Tetherless World Constellation
Rensselaer Polytechnic Institute
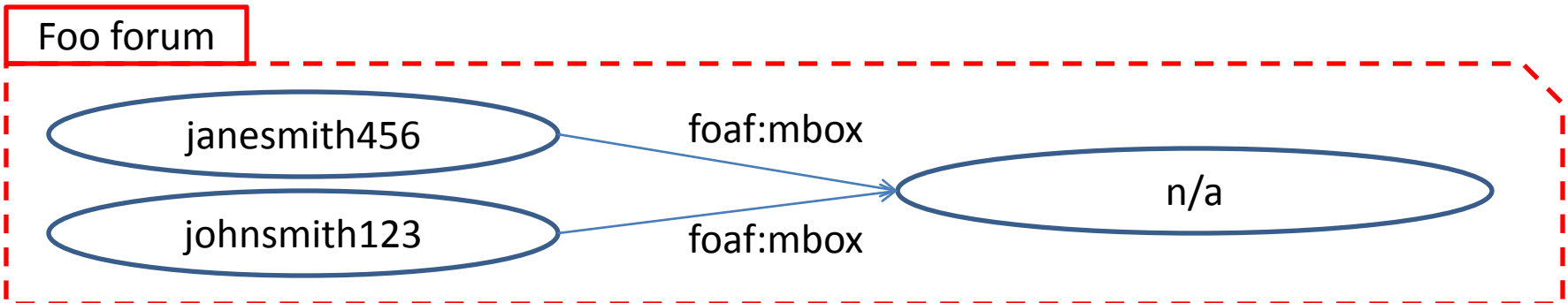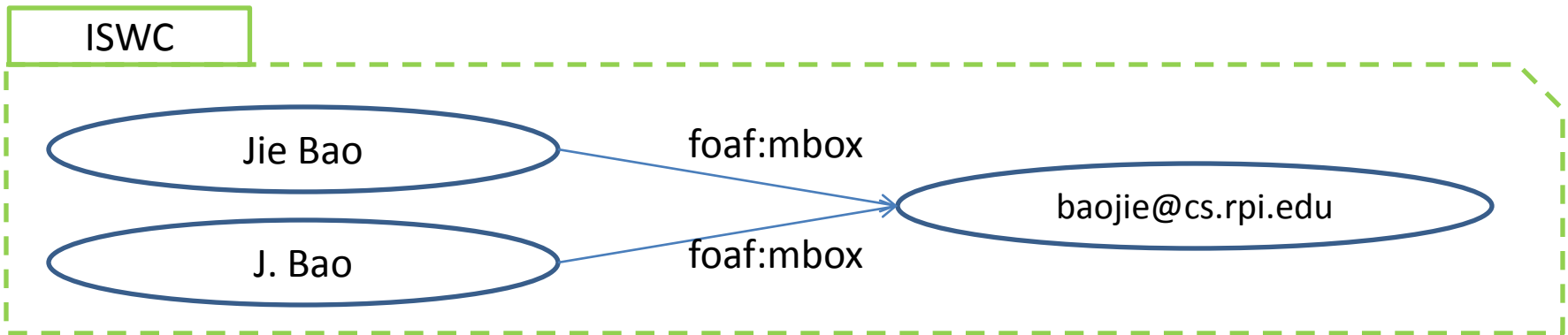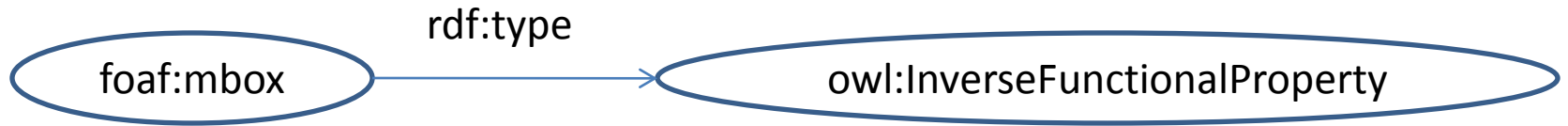Troy, NY, 12180-3590, USA
{baojie,dingl, dlm}@cs.rpi.edu

Context Matters
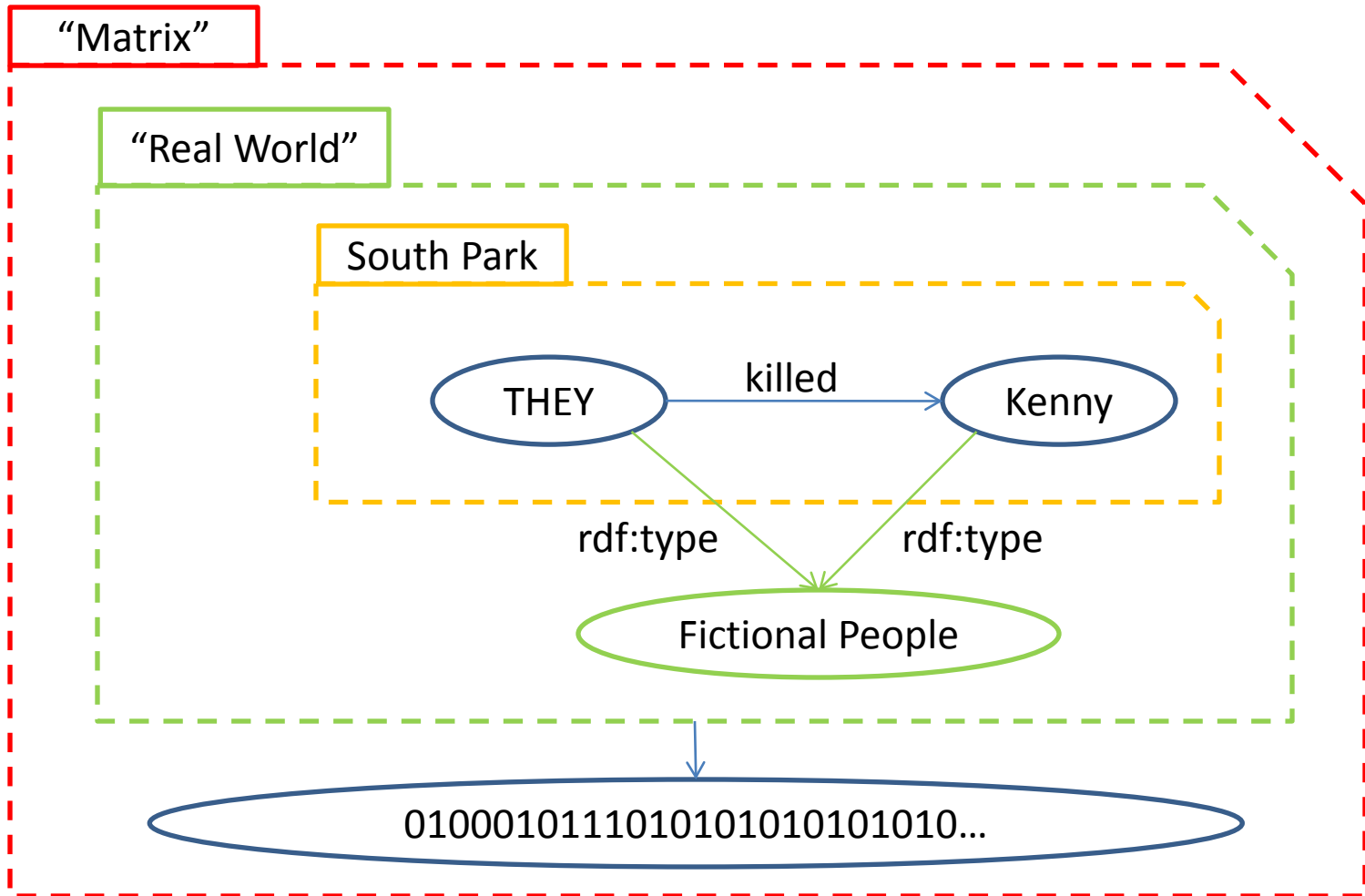## - Provenance

Context Matters
- Assumptions

Context Matters
- "World"

Contexts are

- Something related to the meaning of a sentence
  - Provenance (who, when, where, how, etc)
  - Assumptions (e.g., OWA, UNA)
  - World
  - …

- Claim: when a triple is published/reused/inferred, its context should be made explicit.

Wait

- Don't we already have
  - Named graph
  - C-OWL
  - N3 quotation
  - Contexts in AI
  - …

Named Graph

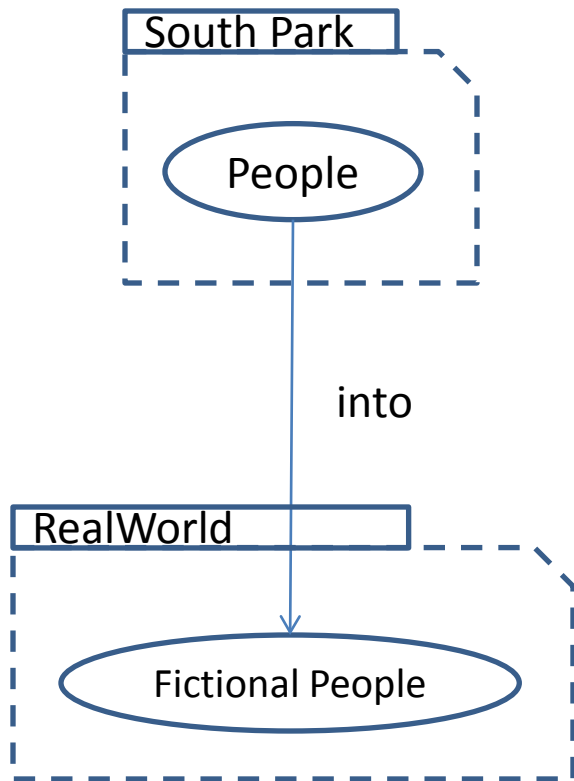**Name = context**

Graph_RPI

    {:LiDing :hasRole
    :ResearchScientist.}

Contexts are more than names

- One triple may be in multiple contexts
- One context may be reused
- Relations between contexts need to be explicit, too.

C-OWL

- C-OWL provides an ontology mapping language that respects contexts.

- Knowledge transfer is controlled.

- Contexts are more than mapping

N3Logic

rpi:LiDing says

    {rpi:LiDing :hasRole
    :ResearchScientist.}

- Again, contexts are more than quotation.

Our Proposal

- Based on named graph
- Add two constructs
  - rdf:context
  - rdf:imports

Adding Contexts to RDF

Part I: rdf:context

G rdf:context C.

C *may* give a context definition document

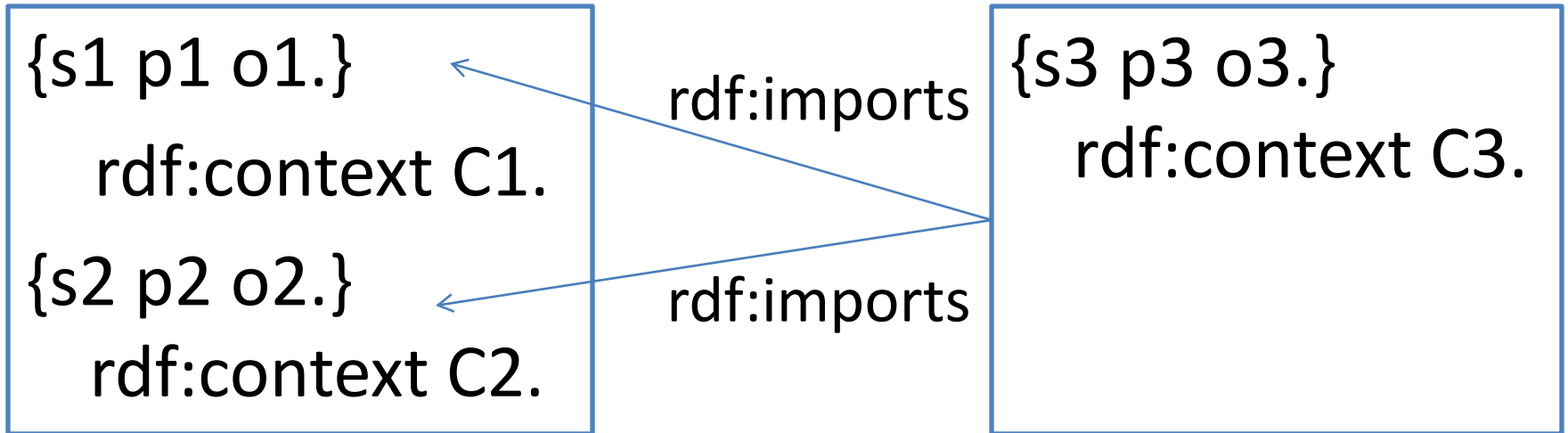C agent LiDing.

C semantics OWL_Full

Part II: rdf:import

G1 rdf:imports G2.
  G1 rdf:context C1.
  G2 rdf:context C2.

- Importing as *citation*
- How knowledge transferred from G2 to G1 *can* be controlled by relations between C1 and C2.

Partial Reuse

{s1 p1 o1.}
   rdf:context C1.

{s2 p2 o2.}
   rdf:context C2.

rdf:imports

rdf:imports

{s3 p3 o3.}
   rdf:context C3.

C3

C3 rdfc:compatibleWith C1.
C3 rdfc:incompatibleWith C2.

Reasoning with Contexts

Context relations

- Compatible

- Incompatible

- Extend

- In

Context rules

- C is compatible with *contexts with agent "rpi:LiDing"*

- C is compatible with contexts that *are compatible with C2*

Can be specified in OWL,RIF or other languages

Open Issues

- Context specification
  - Provenance model?
  - Context relation vocabulary?
- Formal semantics of contexts
- Default contexts