# ISSUE 336

CRMbase (or an extention of it)  may be extended by declaring subclasses of existing classes as well as superclasses.   In the former case all properties of the CRM class will hold for the subclasses. In the latter case the scope CRMbase  will be extended and a property of the CRMbase class may hold for the new superclass but not necessarily. In the case  a property p of a class A also holds for a new superclass B it should be a conservative extension. That is, when restricted to the original class the extended property, p’, is identical to the original property p. In general  a superproperty is said to be a conservative extension of a subproperty when it is identical to the sub property when restricted to its domain an range.

Taken on its own, CRMbase is not affected by such an conservative  extension of scope, since it is not concerned with A. This is similar to what in logic is called a conservative extension of a theory. This construct is necessary for an effective modular management of ontologies, but is not possible with the current way RDF/OWL treats it.

In first order logic the conservative extension of a property can be expressed as follows. Assume that A and C are subclasses of B and D respectively and  that p, p’ are properties between A,C and B, D respectively:

                               A(x)  ⊃ B(x)
                               C(x)  ⊃ D(x)
                               P(x,y) ⊃ A(x)
                               P(x,y) ⊃ C(y)
                               P’(x,y) ⊃ B(x)
                               P’(x,y) ⊃ D(y)

If p’ is a conservative extention of p then

                               A(x) ∧ C(y) ∧ P’(x,y) ≡  P(x,y)