# Issue 517 –HW MD: reflexivity & non-reflexivity

## Reflexivity

Reflexivity is defined in the standard way found in mathematics or logic: A property P is reflexive if the domain and range are the same class and for all instances x, of this class the following is the case: x is related by P to itself. The intenstion of a property as described in the scope note will decide whether a property is reflexive or not. An example of a reflexive property is E53 Place. P89 falls within (contains): E53 Place. Since geometric areas can be arbitrarily close to each other, the distinction, if two places with imunprecisely known extent are identical or are contained one in the other, can be difficult or unknown. Defining this property as reflexive allows for describing in one statement the topological constraint that a place x is either contained in a place y or identical to y. However, it is not meant to instantiate this property in a knowledge base for all instances of the domain class. In First Order Logic, we denote reflexivity by:

“Pnn(x,x)”

## Non-reflexivity

Non-reflexivity is defined in the standard way found in mathematics or logic: A property P is non-reflexive if the domain and range are the same class but for all instances x, of this class the following is the case: x cannot be related by P to itself. The intention of a property as described in the scope note will decide whether a property is non-reflexive or not. An example of a non-reflexive property is E18 Physical Thing. P46 is composed of (forms part of): E18 Physical Thing. Since instances of E18 Physical Thing are required to be distinct, it is reasonable to use the property P46 is composed of only for associating an instances of E18 Physical Thing with a part being different from the whole. In logic, this is expressed by non-reflexivity. In First Order Logic, we denote non-reflexivity by:

“ ¬Pnn(x,x)”