

where rules are directly instantiated for the lists that actually occur in the input RDF graph, which may perform better in practice. Readers are referred to the translation document (see suggested reading) for details.

**Datatype Rules** These rules provide type checking and value equality/inequality checking for typed literals in the supported datatypes. For example, such rules may derive *owl:sameAs* triples for literals with the same value in the datatype (e.g., 1 and 1.0), or an inconsistency if a literal is specified to be an instance of a data type but its value is outside the value space of that data type. The translation to RIF rules is rather straightforward.

## 5.7 Semantic Web Rules Language (SWRL)

SWRL is a proposed Semantic Web language combining OWL DL with function-free Horn logic and is written in Unary/Binary Datalog RuleML (see section 5.11). Thus it allows Horn-like rules to be combined with OWL DL ontologies.

A rule in SWRL has the form

$$B_1, \dots, B_n \rightarrow A_1, \dots, A_m$$

where the commas denote conjunction on both sides of the arrow and  $A_1, \dots, A_m, B_1, \dots, B_n$  can be of the form  $C(x)$ ,  $P(x, y)$ , *sameAs*( $x, y$ ), or *differentFrom*( $x, y$ ), where  $C$  is an OWL description,  $P$  is an OWL property, and  $x, y$  are Datalog variables, OWL individuals, or OWL data values.

If the head of a rule has more than one atom (if it is a conjunction of atoms without shared variables), the rule can be transformed to an equivalent set of rules with one atom in the head in a straightforward way.

The main complexity of the SWRL language stems from the fact that arbitrary OWL expressions, such as restrictions, can appear in the head or body of a rule. This