Let me elaborate a bit more on the ‚sense' past which I am going to refer to as follows:

LexicalEntry -> hasSense -> Sense -> representedBy -> Meaning (which can be a Synset or sth else)

What is a sense?

A sense is the lexical meaning of a lexical entry e when used to refer to some non-linguistic concept c.

Example: the lexical entry „riviere" in the sense of the non-linguistic „stream of water" means: „river which flows into the sea or some other river".

So a „Sense" is a sign that represents the lexical meaning that is evoked in an average speaker when hearing the lexical entry e used to refer to concept c.

What does representedBy mean?

And of course, x can then be further axiomatized using punning in OWL 2. I do not think this is just a „syntactic trick" as I will argue now:

I tend to think the statement representedBy(x,y) as equivalent to the assignment of lambda functions representing meaning to „lexical element" as typically done in formal semantics, i.e.

$$"cat" \rightarrow \lambda x\ cat'(x)$$

So, saying that „cat" has the meaning \lambda x cat'(x) implies that any compositional process will assign the meaning \lambda x cat'(x) to the string „cat".

Here \lambda x cat'(x) is a function of type: <e,t>. So saying somehting like:

representedBy(x,cat') \wedge lemma(x)="cat" \wedge post(x)="noun" is equivalent to saying that „cat" -> \lambda x cat'(x)

Now saying that the meaning is a function is not the same as saying that the meaning is the concept itself.

We can now happiliy continue to axiomatize the symbol cat' as we wish:

$$\forall x\ cat(x) \rightarrow mammal(x)$$

$$\forall x\ cat(x) \rightarrow hasFourlegs(x) \wedge hasTail(x)$$

Inverse Functionality of Sense

$$\forall x_1, x_2, y\ ((hasSense(x_1, y) \wedge hasSense(x_2, y)) \rightarrow x_1 = x_2)$$

So a sense is particular to a specific word.

RepresentedBy or Characterizes?

My intuition here is to say that the lexical meaning of a lexical entry e can be best represented by a symbol (constant) in the vocabulary of a given ontology. Roughly this would say something like: in a compositional process that interprets sentence s in which e occurs referring to the concept represented by concept c, in the compositional interpretation of s, the meaning of e in the sentence will be represented via the symbol c.

Taking another perspective, it is of course also legitimiate to say that e the characterizes the culutral connocations that c has in a given cultural context.

What kind of object is this Meaning?

$$\forall x, y\ represesentedBy(x, y) \rightarrow x \in owl : Thing$$

It is a flat element in the domain of discourse, a first order constant.

Meaning

Now, it is true that a Synset and a function from <e,t> can be said to represent the meaning of a lexical entry l. In this sense we could indeed a taxonomoy of meanings. After all, all these are different „views“ on the meaning of a lexical entry, expressed in different more or less formal systems.

Shortcut

Now the question is whether for some uses we want to abstract from the specific lexical meaning of a lexical entry e. Therefore I was proposing to use the shortcut: