Chapter 5

Evaluation & Comparison

5.1 Evaluation

The developed ontology was evaluated by experts by querying it with competency questions and verifying the results.

The fig.- 33(a) shows the following query:

" Average >=40 & price should be between Rs. 50000 & Rs. 60000, and engine capacity should be >=125"

The fig.- 33(b), shows the results after execution of the *Resoner*, the results were verified by the experts and were found to be consistent.

Fig.33(a): Evaluation of competency question

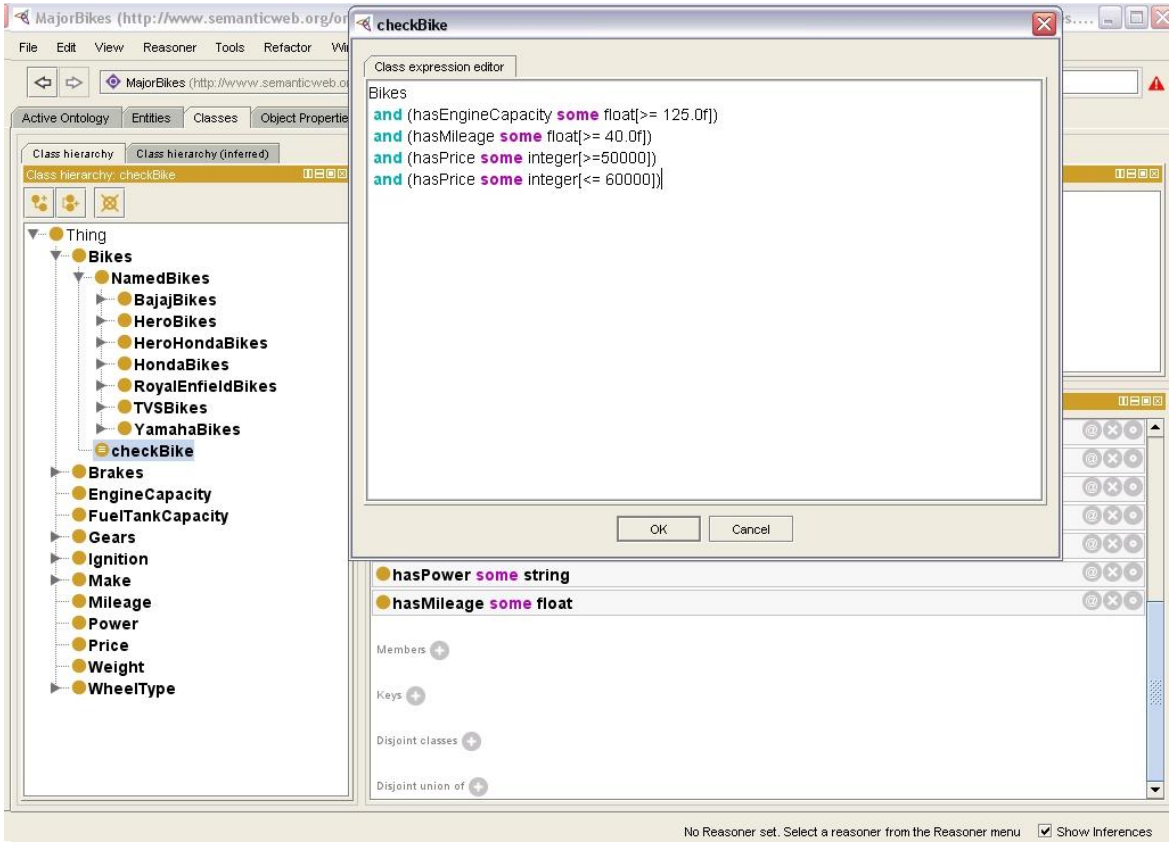
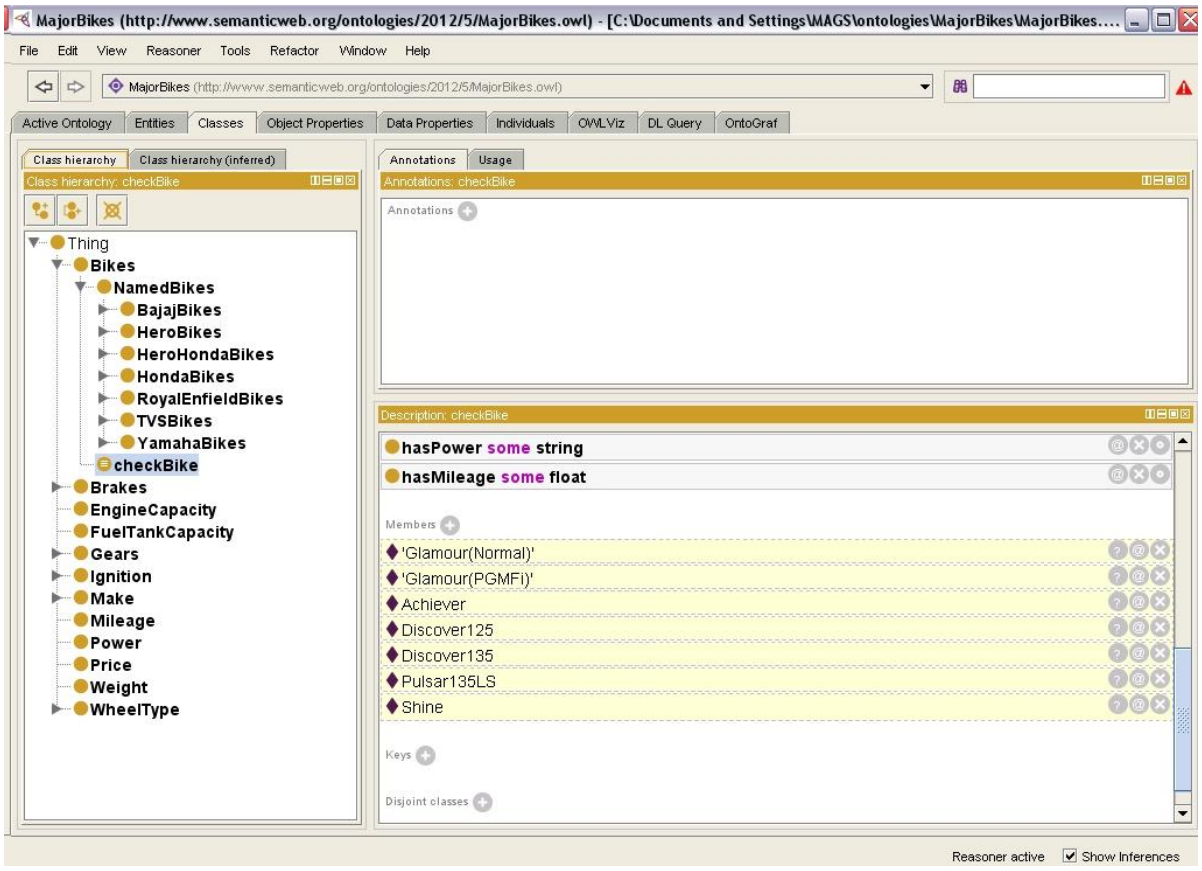


Fig. 33(b): Evaluation of competency question



The hierarchy was also evaluated by experts for created class and individual properties by using ontology tool (like OntoGraf & OWLViz). These tools infer and create Ontology Graph automatically and thus help to judge whether subordination between the class and individual in the graph are coincident. The fig.:34 shows the output of OntoGraph and fig.: 35(a), 35(b) shows the output of OWLViz.

Fig. 34: The output of OntoGraf

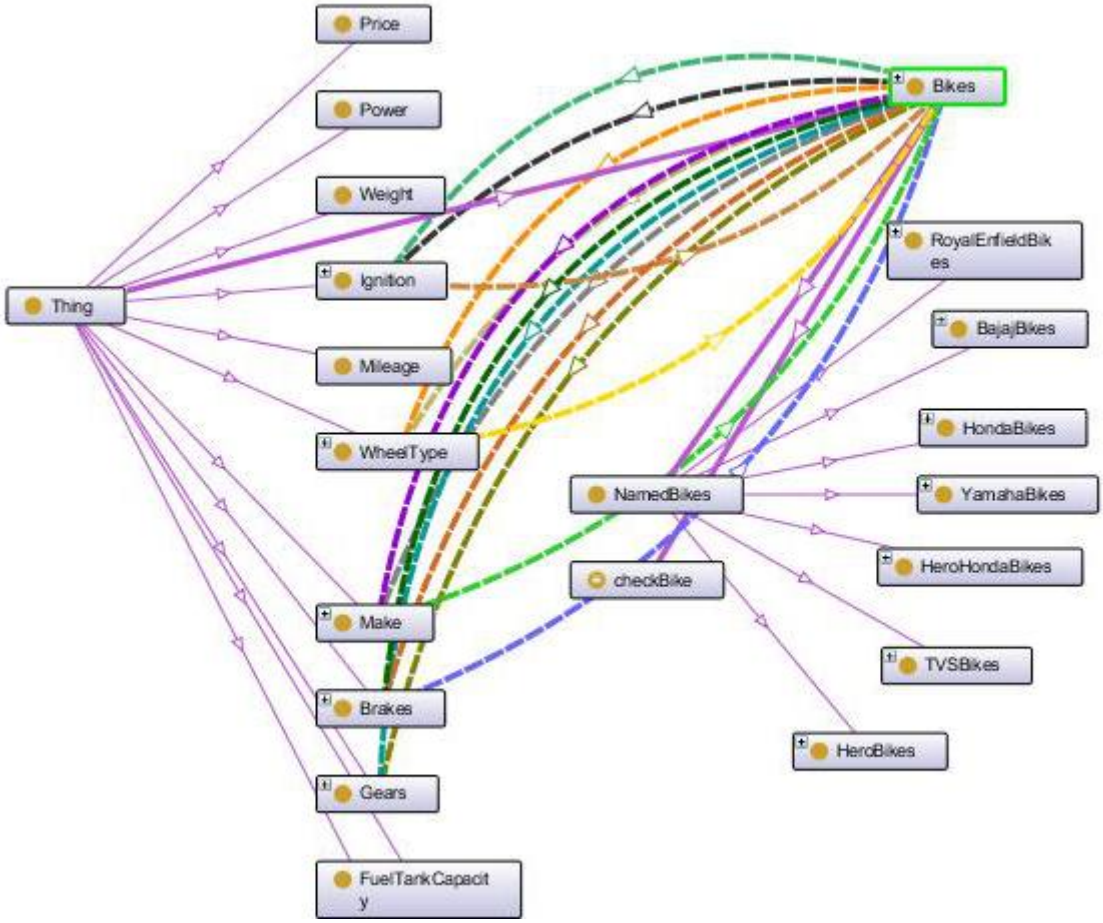


Fig. 35(a): The output of OWLViz

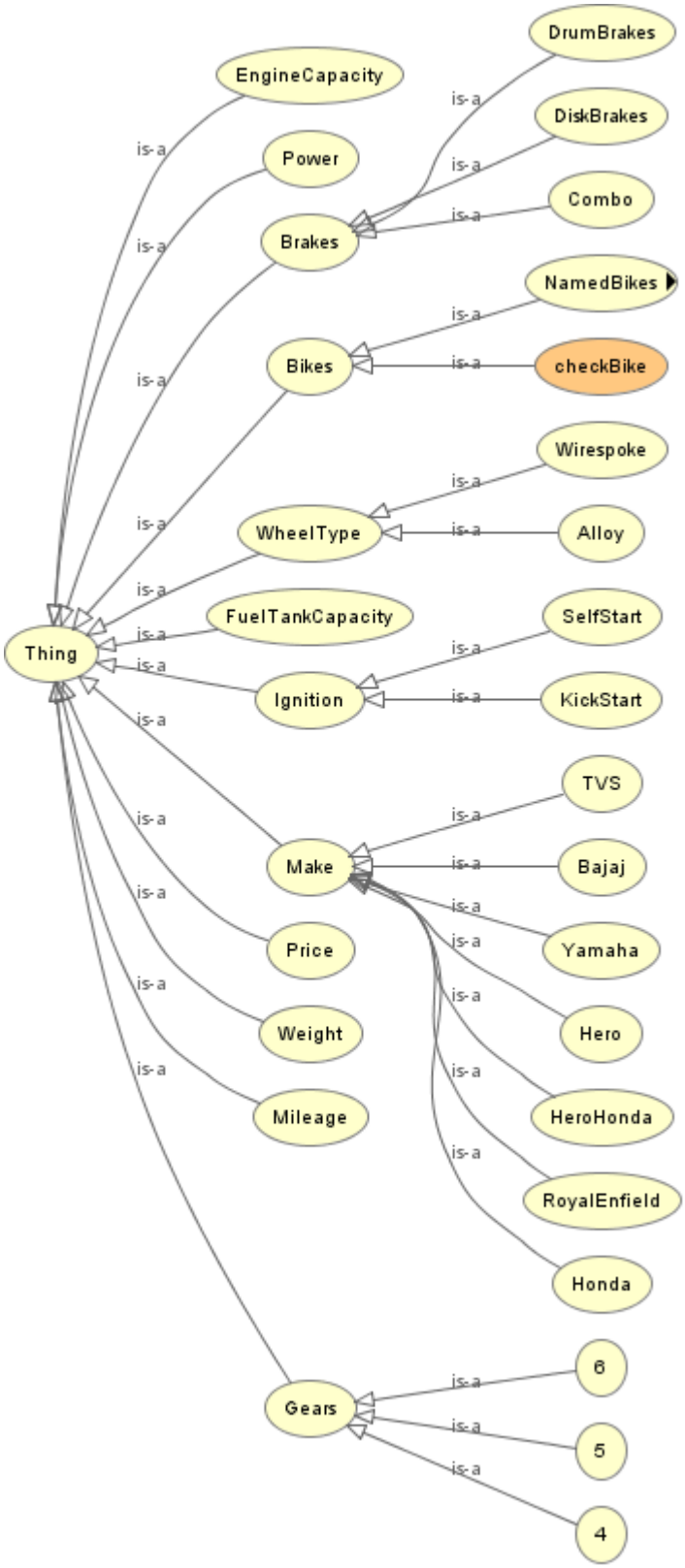
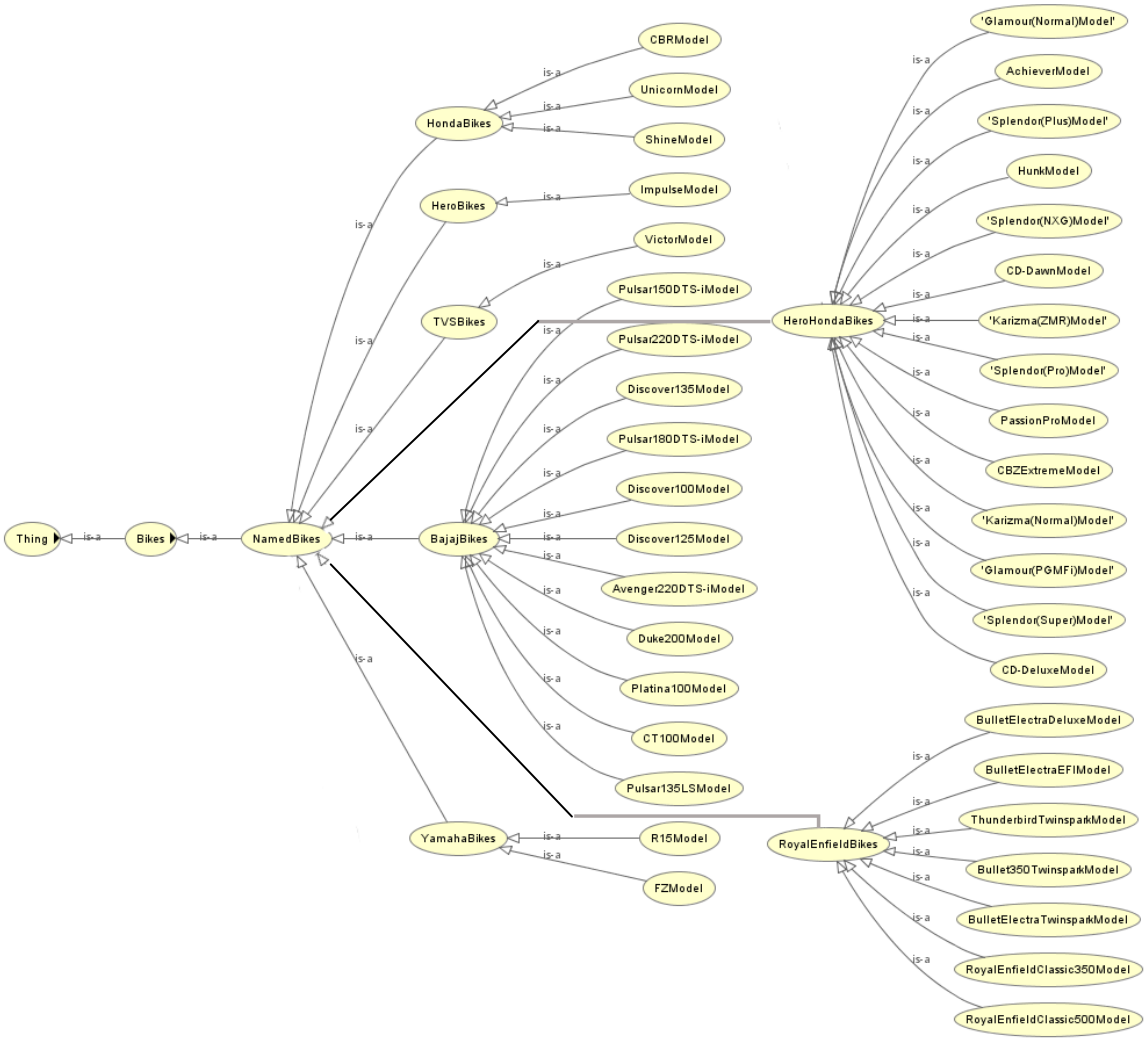


Fig. 35(b): The output of OWLViz



5.2 **Comparison of Ontology Engineering Methods:**

Our methodology namely *On-To-Methodology* overcomes the various problems that are left unaddressed by existent methodologies. The following are the advantages that *On-To-Methodology* offers:

- *Better domain cognition*

  As listed in Section 1.3, there exists inconsistency in domain cognition. Our method handles this problem by adapting group oriented activities thus enabling experts and users to define the domain in better terms.

- *Unification of viewpoints*

  Inconsistency in viewpoints arises as different people have different perspectives and due to this contrary conclusions may be obtained. Our methodology resolves this problem by instrumenting the development process with evaluation activities after each phase of the development process. Also, the unification is achieved due to the adaptation of group oriented development activities.

- *Exhaustive documentation*

  On-To-Methodology provides an extensive and exhaustive documentation support thus making the development process more formal and helps in achieving traceability across phases. Documentation also simplifies the maintenance of the ontology by providing the backward traceability of various components of the ontology.

- *Extensive Verification & Validation*

  These two tasks of verification and validation are interleaved between various phases of the development process. This prevents introduction of bugs into the system right from the beginning of the development process and prevents faults till the maintenance phase.

Table- 5 presents the mapping of main concepts of our On-To-Methodology to notions used by previously presented Ontology engineering methods.

Chapter 6

CONCLUSION & FUTURE WORK

The work carried out in this report provides with strong base in Ontology Engineering. Here we have presented the theories and principles for construction of ontology according to various currently existent methodologies. We also noted the various issues related to the field of ontology development.

Since there exists no one methodology that can be applied in all scenarios of ontology development, our main emphasis here is on building a methodology that can be used as a standard method for ontology construction under various domains. For this we have proposed a method namely *On-To-Methodology*. Then we illustrated our methodology by working out an Ontology of bikes. We also subjectively compared our methodology with various other existent methodologies.

The future work entails development of a tool that will automatically generate the Conceptual model of the knowledge. Another future direction is to develop software that would work on the ontology of Bikes that we created and has simpler graphical user interface so that it could be operated by non-technical users.

Chapter 7

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