Chapter 6

Conclusion

This study pointed out two problems of past studies of non-deductive reasoning. One is a way to describe a task of non-deductive reasoning system can hugely influence the effectiveness of the system, which is an issue both in the induction and analogical reasoning. The other is the fact that the desire to implement practical systems has somehow postponed to analyze semantic nature of the reasoning, which is an issue for analogical reasoning. As solutions for above problems, this thesis proposed preprocessing for induction, automatic domain-division for analogical reasoning and declarative semantics for analogical reasoning. For the first one, a new method that is as effective as the best method among past studies and computationally efficient was implemented. For the second, a framework of analogical reasoning where partitioning is regarded as a part of analogical reasoning was defined and a creativity support system, an application which employs the framework, was implemented and its effectiveness was tested experimentally. For the third one, a declarative semantics for analogical reasoning that is based on a semantics for hypothetical reasoning was shown and its properties were investigated.

Future works should include the following.

- **Preprocessing for induction**
  Toward a faster preprocessing, a new filter method should be developed[57]. Combination of the method and EBFS should be investigated.

- **Automatic domain-division for analogical reasoning**
  Partitioning that takes semantic information into account should be studied in order to implement purpose-oriented partitioning.

- **Declarative semantics for analogical reasoning**
  Limitations should be removed so that it can be applied to practical

93

applications.