Complexity and Maintenance: A Comparative Study of Object-Oriented and Structured Methodologies

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Michael Andrew Bailey

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ABSTRACT

Maintenance has been found to be one of the most expensive phases in the life of an information system. It has been suggested that the use of object-oriented methods instead of traditional structured methods may be one way of reducing the cost of maintenance required for an information system.

This thesis is an attempt to determine whether the object-oriented approach does in fact undergo a relatively smaller increase in complexity when subjected to a change in specifications than a similar system that is developed using a "structured methodology", and is therefore easier to maintain.

The methodologies used in this study were Yourdon's (1989) Modern Structured Methodology and Booch's (1994) Object-Oriented methodology. The analysis phase of both methodologies were applied to the same case study twice in order to evaluate the effects of a change in the system's specifications.

Once the two models for each methodology were complete, various metrics were applied to the structured system and a separate set of metrics were applied to the object-oriented system. The results of the models and the metrics were then analysed and validated in order to determine which system suffered a smaller proportional increase in complexity as a result of the changes to the system.

It was found that overall, the object-oriented system proved to undergo a smaller increase in complexity, and it was therefore easier to maintain as a result of the changes than the structured system.

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