Dark Programming and The Quantifying of Rationality and Understanding in Software

Isaac Griffifth
isaacgriffith@gmail.com

Stephani Scheilke
stephani.scheilke@gmail.com

Objective: To restructure software in order to increase the understandability, reusability, and maintainability as a means to quantify the rationality of a program. In effect, unveiling the potentially lost subjective knowledge and processes embedded into the original code by the Software Engineers.

1. Introduction

This work presents an attempt to provide empirical answers to:

- Rationality of emergent programs
- The link between rationality and understanding of programs
- Analysis of metrics to measure these qualities over the scope of large projects
- Software Engineering issues dealing with automated refactoring the understandability of software by multiple engineers

2. Refactoring

- Refactoring is provided by manipulating entities within a graph structure representing the content of an entire source code base of an application
- These operations implement a defined technique which modifies the structure of the software without changing its overall function.
- The refactoring operations used are:
  - Move Method
  - Move Field
  - Pull Up Method
  - Pull Up Field
  - Collapse Hierarchy
  - Push Down Field
  - Push Down Method
  - Move Class

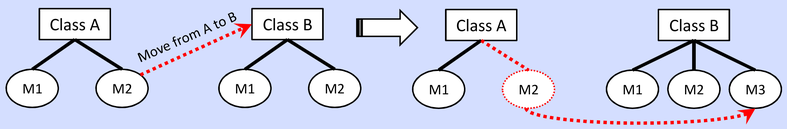
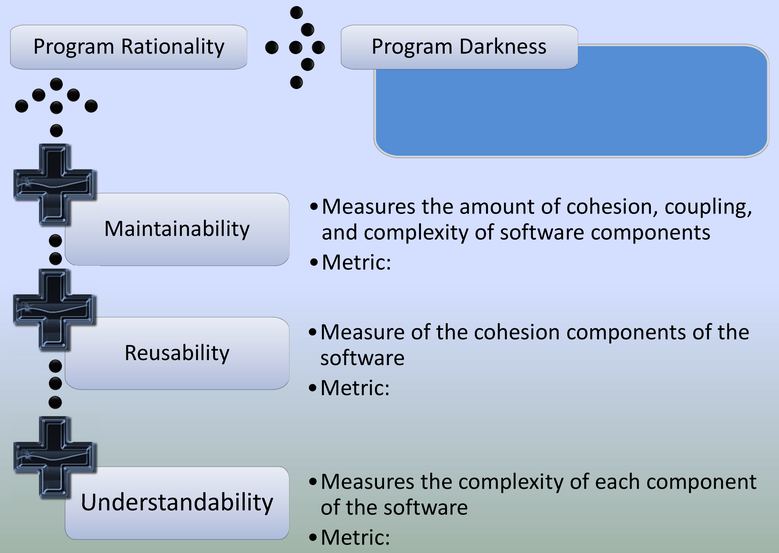


Figure 1. Example Refactoring Graph Operation

3. Metrics and Measures



4. Basic Process

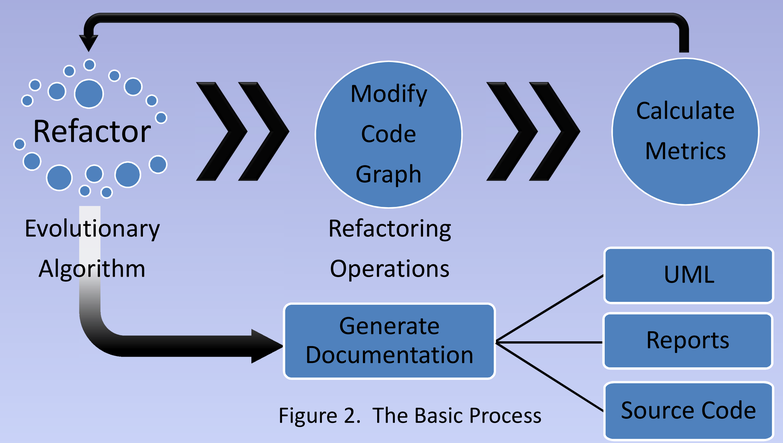
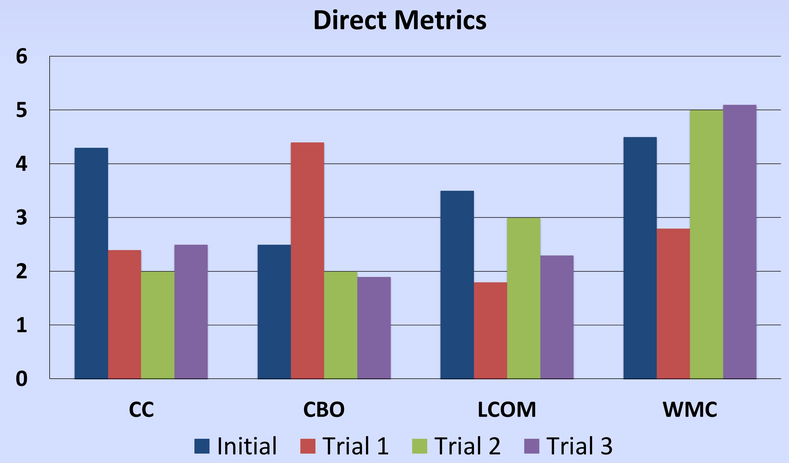
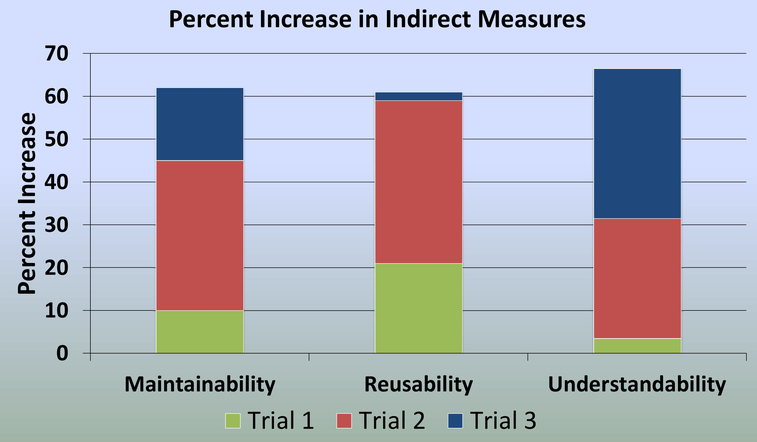


Figure 2. The Basic Process

5. Results





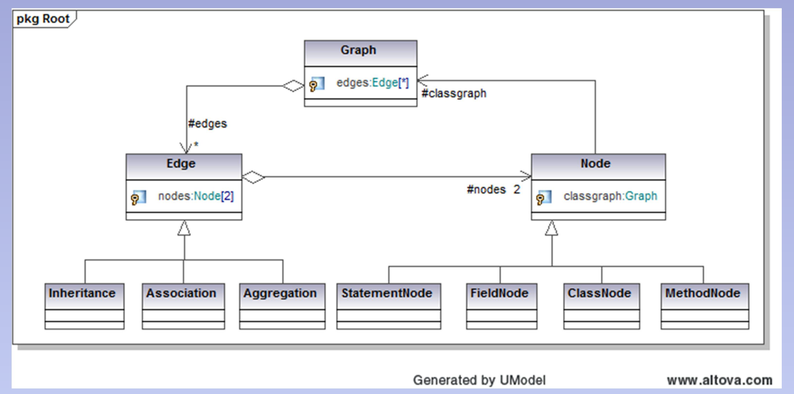


Figure 3. Example Resultant UML Documentation

6. Mathematical Implications

7. Philosophical Implications

8. Conclusions