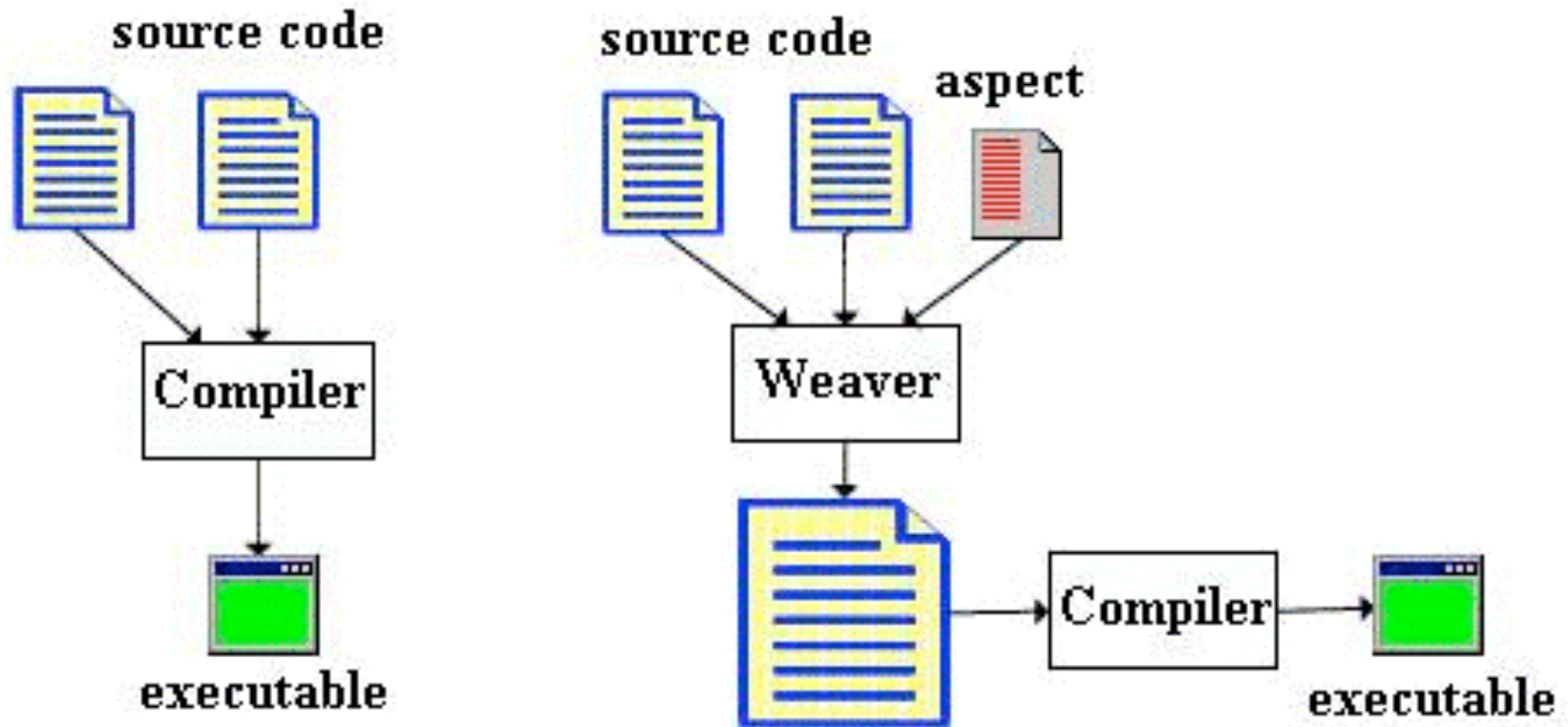# Aspect Oriented Programming

Basic Idea

AOP Picture

Aspect file

- Contains instructions for editing program text at the source level
  - **Sophisticated description of where and what to edit**
    - **Insert, delete, replace**
    - **New program text**
  - **Fancy extension of sed the Unix stream editor**

- Can have recursive structure
  - **Source text could be other Aspect files**

Benefits

- Original source is untouched
  - **Do not need to keep versions**
  - **Only need Aspect file**

- Can use tools to create base version
  - **Use Aspect files to customize**
  - **Problem with base version**
    - **Regenerate**
    - **Reapply Aspect**
  - **Without Aspect**
    - **Avoid regeneration with tool**
      - Need to manually re-customize – complex, error prone
    - **Need to manually insert what regeneration would do**
      - Complex error prone manual labour

History

- AOP developed by George Kiczales (1984-1999)
  - **At least the commonly accepted start**

- Predecessors
  - **WEB system Donald Knuth late 1970's early 80's**
    - **Literate programming**
  - **Breakpoints Gunnar Gotshalks / Paul Bassett (1977)**
  - **CAP frames Paul Bassett (1983)**
    - **Best software reuse in the world during the 1990's**
  - **FlexOr frames Gunnar Gotshalks (1986)**