

Object-Oriented Approaches to Programming

~ Introduction ~

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Outline

Genesis

History





Plan

Genesis

History



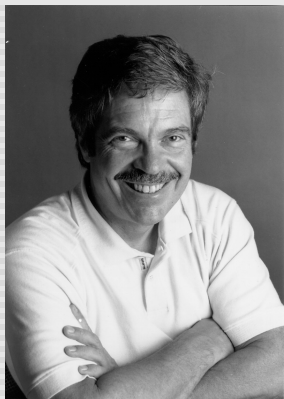
Terminology

It was probably in 1967 when someone asked me what I was doing, and I said: "It's object-oriented programming." [...] I thought of objects being like biological cells and/or individual computers on a network, only able to communicate with messages.

— Alan Kay [Kay, 2003]

▶ **Big mistake!**

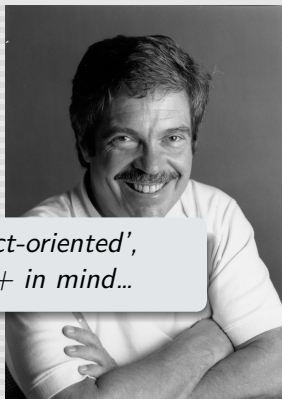
“Message-Oriented Programming” would have been more appropriate (*dixit* Alan Kay himself)



Terminology

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Actually I made up the term 'object-oriented', and I can tell you I did not have C++ in mind...



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Real World Objects

- ▶ *State* (static)
- ▶ *Behavior* (dynamic)

Person

first name / last name / age

—

eats / works / moves

Plane

brand / color

—

boards passengers / moves

- ▶ Every person has a name, but not the same. Every employee has an employer, but a person is not necessarily an employee. Persons and planes move, but not in the same way, *etc.*
- ▶ OOP helps expressing that kind of relations





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History

Smalltalk (1971, released in 1980)

- ▶ Alan Kay & Dan Ingalls
- ▶ “All object” and message passing
- ▶ First “object-oriented” language
- ▶ Context: DynaBook [Kay, 1972]



Simula (1962, but mostly 1967)

- ▶ Ole-Johan Dahl & Kristen Nygaard
- ▶ Already contains all the concepts
- ▶ Smalltalk's greatest source of inspiration
- ▶ The paternity of the concepts is attributed to Dahl / Nygaard
- ▶ Their goal was different from that of Alan Kay



History

Smalltalk (1971, released in 1980)

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- ▶ “All object” and message passing
- ▶ First “object-oriented” language



Sir

- ▶ *Most programming systems were named “Zeus”, “Odin”, or “Thor”, and hardly did anything. I figured that “smalltalk” was so innocuous a label that if it ever did anything nice, people would be pleasantly surprised.*

- ▶ Smalltalk’s greatest source of inspiration
- ▶ The paternity of the concepts is attributed to Dahl / Nygaard
- ▶ Their goal was different from that of Alan Kay



Current Object-Oriented Landscape

▶ No proper definition

- ▶ Numerous languages, very different views
- ▶ Fuzzy set of concepts, neither exclusive, nor exhaustive
- ▶ Ill-defined / -articulated concepts [Nierstrasz, 2010]

▶ Standardization effort

- ▶ OMG (Object Management Group)
American non-profit organization created in 1989
- ▶ UML (Unified Modelling Language)
OMG's standardized language for graphical modelling of object-oriented systems (software components, interactions, sequential execution, hardware deployment, etc.)



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Object-oriented programming is an exceptionally bad idea which could only have originated in California

— Edsger Dijkstra

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Plan




Bibliography





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