

Small Matters can Matter

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Summary

A personal and irreverent look at Smalltalk and related issues as they have affected my views of computers

Conclusions

- How we look at things can greatly affect what we see and learn
- Looking at things from new and interesting perspectives fosters innovation and understanding
- There is something special about Smalltalk

Point of View is worth 80 IQ points

Alan Kay

Three examples:

- Special cases dominate
- Insides vs Outsides
- In the Small vs In the Large

Special Cases Dominate

Virtual Machines and Class Libraries:

```
replaceFrom: start to: stop with: aString  
startingAt: index  
  <primitive: 27>  
start to: stop do: [ :i |  
  self at: i put: (.....  
  ]
```

Insides vs. Outsides

Smalltalk:

+ aPoint

^(x + aPoint x) @ (y+ aPoint y)

C++:

addPoints(Point a, Point b)

{return new Point(a.x+b.x, a.y+b.y)}

In the Small vs In the Large

Small:

- Reconstitue, rewrite, optimize
 - Eg. White box usage...text reuse

Large:

- Standardize, fit into, framework, reuse, specialize
 - Eg. Black box usage...object reuse

Duck Programming

If it walks like a duck, and talks like a duck,
and acts like a duck then treat it like a
duck

– Dan Ingalls

Great Software is built by the seat
of the pants

Apologies to Carroll Shelby

Risk should be managed not eliminated

Cargill

When nothing is working, Failure is
not to be feared

IBM Santa Teresa Labs

The Critical innovation may not be in the Software

Volt 600S print station

A single insight clears a lot of fog

- The web is autonomous computing
- All web data is stale

- Grokking Webscale SOA

Not Knowing Everything is OK

Software and Hardware is a black box

- NDS hospital and furniture systems
- Modern Chips

Software is Lived with, Not Delivered

Boeing Aircraft

Really Large Systems are Evolved not Built

- Eg. The web

Usage is better than Analysis

- Dogfooding
- UCLA med system

A little Slac goes a long way

- Fit and finish matter
- Agility and resiliency enables reuse

Importance of Smoke and Mirrors

Virtual Machines are illusions made from smoke and mirrors, and the good ones never let you see beyond the smoke

– Dan Ingalls

Where we are headed

- Large systems
- Huge multi-cores
- Software always on
- Old tradeoffs no longer appropriate

Concluding Observations

- Requiring perfection leads to disaster
- Mistakes are to be encouraged, and learned from

Smalltalk encourages the latter

Finally

- Having fun is important too