




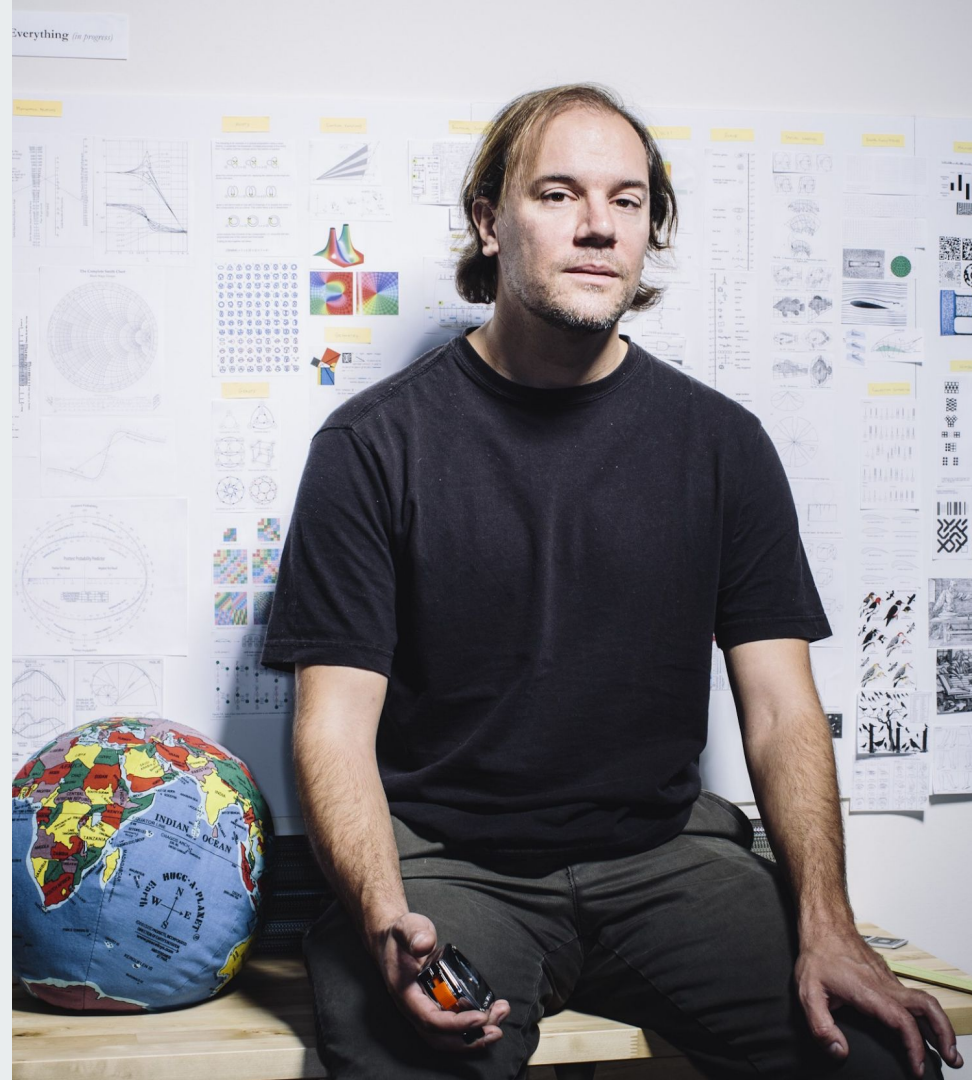
Introducing Bret Victor

A presentation by Ana, Madeleine, Steven, Patricia, Sara
& Linda



I intend to invent a humane
medium in which the
thinkers of the next century
will **see, understand, and
create systems.**

- Bret Victor



CV



Alesis

Designed and engineered analog-modeling synth / groovebox.

Independent research

into novel interfaces

2002 - 2004

2007-2010

2011-2013

2014-today

Apple

Part of the future-interface prototyping team

Dynamicland

Inventing a humane real-world computational medium for deep understanding

Other people's principles:

- Larry Tesler: no modes when creating
- Elizabeth Cady Stanton: there is gender discrimination
- Doug Engelbart: interactive medium to solve complex problem
- Alan Kay: rethinking medium with children

What is the meaning of being a programmer?

- Solving and discovering a problem that was not recognized before
- not an opportunity, but responsibility
 - Loosing ideas = wrong moral & injustice
 - not a joy of making things or find existing problem to solve
- activism through inventing and ever-changing
- vision for what a better world could be like

Problems he discovered

- lack of immediate connection in most coding cases
 - slows down thinking and creating process
 - does not encourage new ideas
- Takes too long till programmer sees the results
 - Same applies to animation

What is his vision (principle)?

New medium

Media connection: creators need to see the immediate effect

New mindset/era

Do:

Think and create what we want as a human being

Don't:

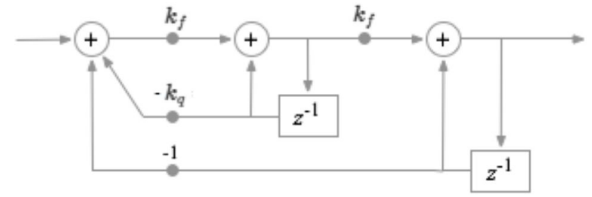
Think what computer is doing and how to do it through computer mind set

Think like computer

Ideas should grow with a suitable environment

Example: Explorable Explanations:

- The explorable is integrated with the explanation
- Humane interface
- Giving control to the reader: evoke reader curiosity



parameters

transfer function

schematic

z-plane

step response

frequency response

$F_c = 1.2 \text{ KHz}$
 $Q = 3.5$

$$\frac{0.029}{1 - 1.922 z^{-1} + 0.951 z^{-2}}$$



-text as **information to be consumed**. I want text to be an **environment to think in**

Implementing the principle

- Live Scratchpad extension for Firefox is created by Cedric Vivier of the Mozilla Devtools team
- Demos by Bret Victor

Advantages of his principle:

- Great as an incentive for kids to learn computing.
- Encourages to think outside of the box: can help to develop new abilities
 - Important: it integrates social skills with programming, which is currently not common
- Combines the technological and visual for a better understanding of the actual programming processes
 - Ability to really see what happens when a certain piece of code in form of paper (etc.) is moved to a different position
 - Ability to visualise direct consequences

What is his future expectation?

His concern:

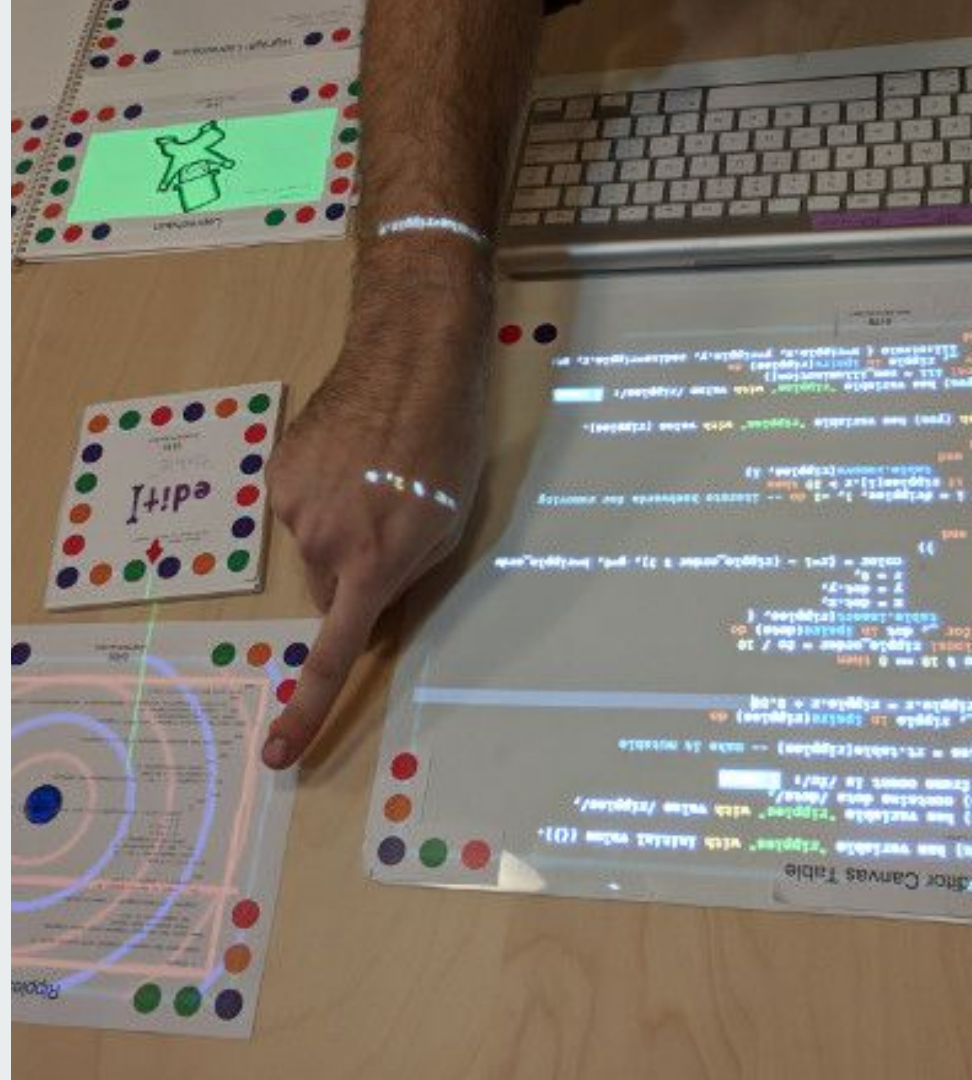
- Easy to adopt technology, hard to adopt new way of thinking
- forget new idea can be created on programming model in the first Place
- people know what program is > one way of programming
- no insight of how idea generated in the computer history

His hope:

- People can do things with computer but still do not know what programming is
- Mind free
- Tried every approach

Dynamicland

- Non-profit long-term research group
- Inventing a new computational medium
- Entire room is a computer
- Encourages teamwork and crafts



Critique of Dynamicland

- Difficult to implement: requires a lot of space and specific tech
- Questionable learning process: not clear how to go from Dynamicland to actual programming
 - Could be fixed by using Dynamicland as the main way to program, but it would take too long to make it mainstream.
- Can experienced programmers benefit from it?
 - Who is the target audience?
- There is still a central computer involved
 - Is it really impossible to program without a computer?
- Can very complex issues be solved by using Dynamicland to program?

General Takeaways from Bret Victor

- Don't take things the way they are
 - critically examine and question them
- Design for humans / extent the human being

What do **YOU** take away from his approach?