THE LINGUISTIC RELATIVITY OF PROGRAMMING LANGUAGES

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PolyConf 2016

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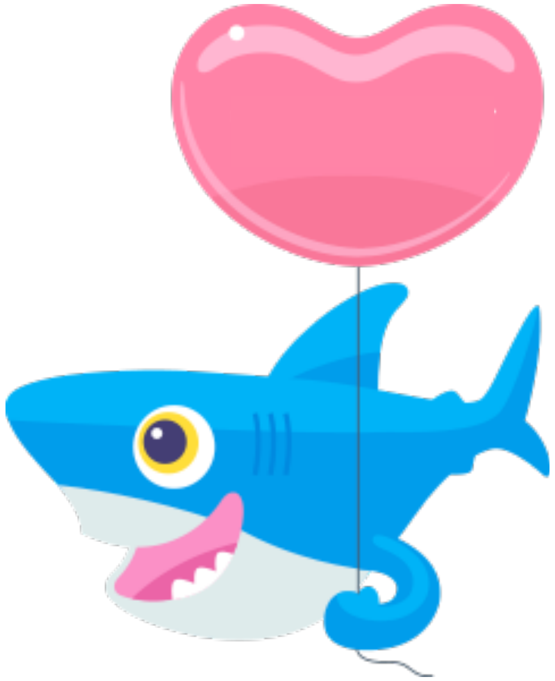
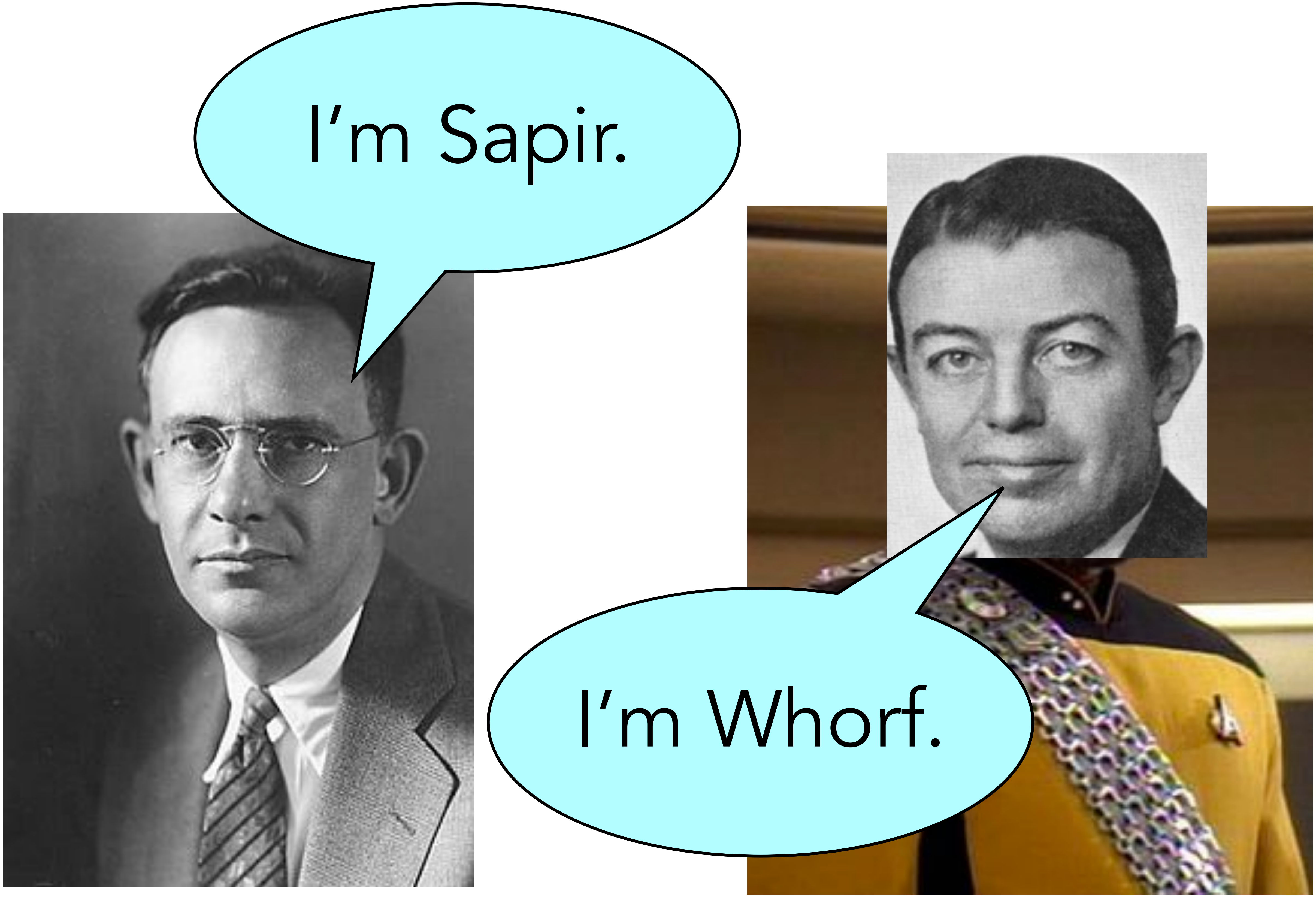


zeigenvector

Organizer @ EmpireJS

BRIGHT ENAMEL
DURABLE BRILLIANT FINISH
EMPIRE
JAVASCRIPT
JS
JS
JS
JS
JS
DANGER: EXTREMELY ASYNC, HAZARDOUS OR FATAL IF USED INCORRECTLY, CONTENTS UNDER PRESSURIZED

1. Linguistic Relativity
2. … and Programming Languages?
3. Previous allusions
4. How it applies
5. Implications



https://en.wikipedia.org/wiki/Linguistic_relativity

SAPIR-WHORF HYPOTHESIS

The languages you speak {determine | influence} the way you think.

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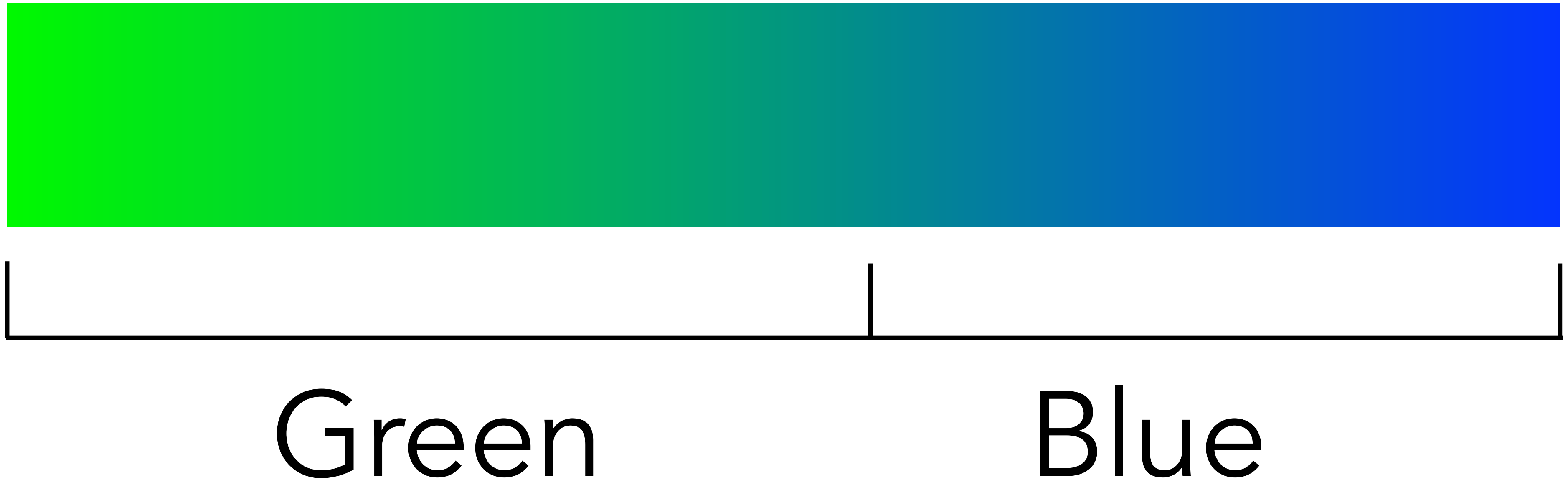
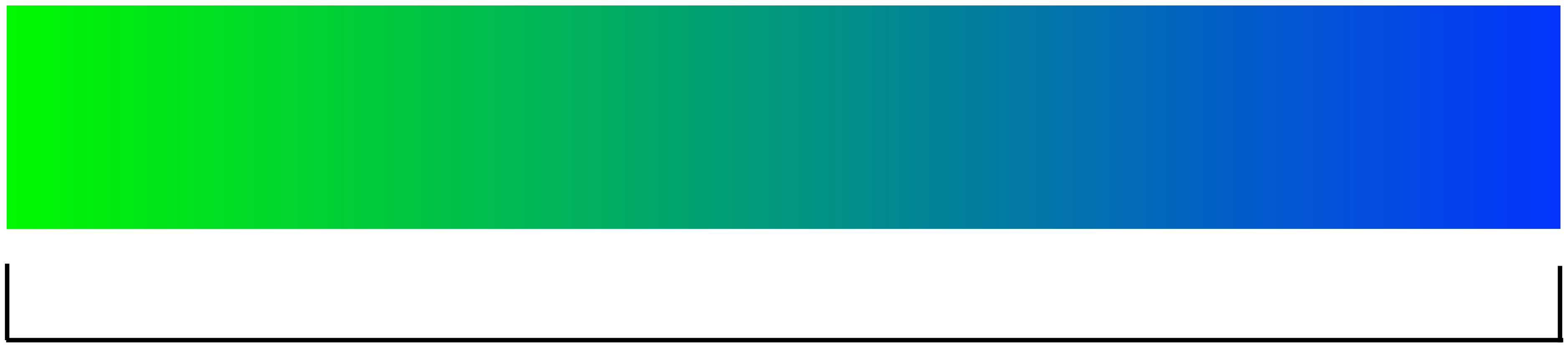


Green

Blue

https://en.wikipedia.org/wiki/Blue%E2%80%93green_distinction_in_language
https://www.newscientist.com/article/dn11759-russian-speakers-get-the-blues/

SAPIR-WHORF HYPOTHESIS



Grue

https://en.wikipedia.org/wiki/Blue%E2%80%93green_distinction_in_language
https://www.newscientist.com/article/dn11759-russian-speakers-get-the-blues/

But what about

CODE

????????????

Proposal: The programming languages we know strongly influence the way we think about programming.

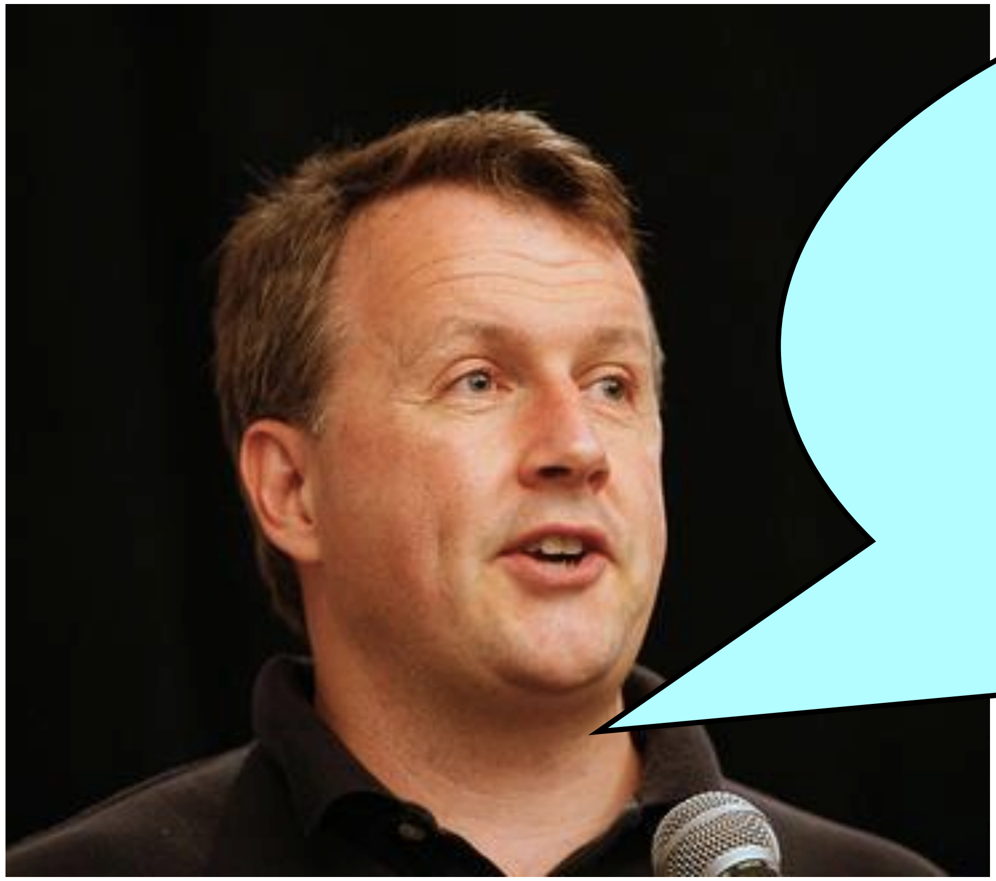
Programming languages **create** and **manipulate** the space, rather than just describe it.

“Programming languages, because they were designed for the purpose of directing computers, offer important advantages as **tools of thought.**”

Kenneth Iverson, “Notation as a Tool of Thought” (1979)

bit.ly/Iverson-NotationAsToolOfThought
https://en.wikipedia.org/wiki/Law_of_the_instrument

BLUB PARADOX



Some programming languages are more powerful than others.

Paul Graham, “Beating the Averages” (2003)

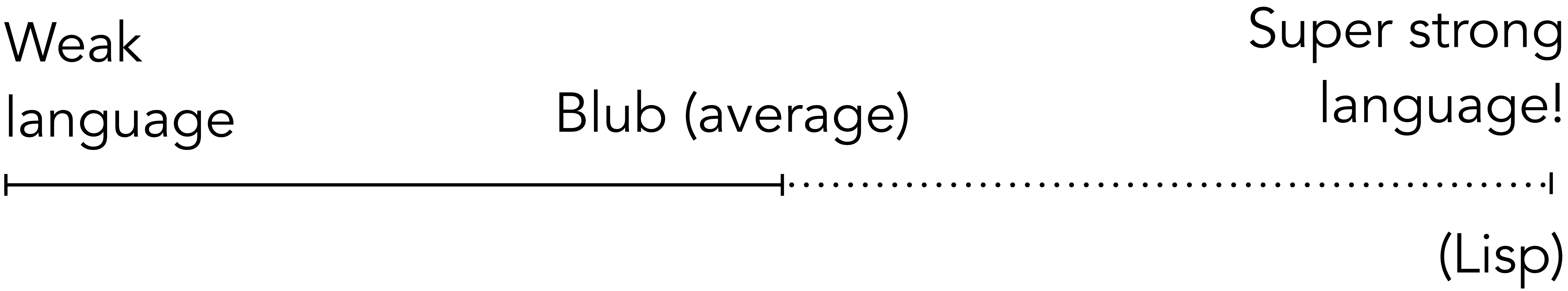
BLUB PARADOX

“Some programming languages are more powerful than others.”

Weak language
Blub (average)

BLUB PARADOX

“Some programming languages are more powerful than others.”



BLUB PARADOX

"I look at [Python, Java, C, and Perl]. How can you get anything done in them, I think, without macros?"

Paul Graham, "Beating the Averages" (2003)

BLUB PARADOX

“They're satisfied with whatever language they happen to use, because it **dictates** the way they think about programs.”

Paul Graham, “Beating the Averages” (2003)

BLUB PARADOX

“I know this from my own experience, as a high school kid writing programs in Basic. That language didn't even support recursion… but I didn't miss it at the time. **I thought in Basic.**”

Paul Graham, “Beating the Averages” (2003)

SCARRED FOR LIFE?

"It is practically impossible to teach good programming to students that have had a prior exposure to BASIC: as potential programmers they are **mentally mutilated beyond hope** of regeneration."

Edsger Dijkstra, "How do we tell truths that might hurt" (1975)

bit.ly/dijkstra-truths

MENTALLY MUTILATED
BEYOND HOPE?!?11/?
memegenerator.net

We are influenced by the **constructs** and **idioms** of the most powerful programming language we **know**, not the languages themselves, or the language we are using at the time.

http://bit.ly/cutest-red-panda

1. We can learn more (powerful) programming languages and how to program in them idiomatically.

HUMANS CAN LEARN

HUMANS CAN LEARN

loops

HUMANS CAN LEARN

loops

list comprehension

HUMANS CAN LEARN

loops

list comprehension

map

2. We can implement the constructs of more powerful languages in whatever language we use.

CODE CAN MAKE THINGS

“We should now think of a language design for being a pattern for language designs, a tool for making more tools of the same kind.”

Guy Steele, “Growing a Language”

bit.ly/growing-a-language

CODE CAN MAKE THINGS

```
_.map(array, function(el) {
   return el + 1;
})

array.map(function(el) {
   return el + 1;
})
```

CODE CAN MAKE THINGS

"Sweet.js brings the hygienic macros of languages like Scheme and Rust to JavaScript. Macros allow you to…**craft the language you've always wanted.**"

sweetjs.org
https://www.youtube.com/watch?v=wTkcGprt5rU&sns=tw

CODE CAN MAKE THINGS

The future can be now (kinda).

3. Programming languages are synthetic and can change.

SYNTHETIC LANGUAGES CAN BE CHANGED

loops

SYNTHETIC LANGUAGES CAN BE CHANGED

loops

map

SYNTHETIC LANGUAGES CAN BE CHANGED

loops

map

generators

SYNTHETIC LANGUAGES CAN BE CHANGED

loops

map

generators

~~array comprehension~~

https://twitter.com/BrendanEich/status/748200613780029441
https://twitter.com/awbjs/status/748219130260520960

SYNTHETIC LANGUAGES CAN BE CHANGED

"Languages that can't easily grow will die."

Guy Steele, "Growing a Language"

SENORGIF.COM

MONOCONF

Learn new languages!

Find cool things!

Bring them back!

Share!

Slides: jenna.is/at-polyconf

Blog Post: bit.ly/ling-rel-prog

🐦 zeigenvector

Thanks!

↑
Me