Snakebitten

Danger and Misfortune in the Evolution of Languages

Snakebitten:

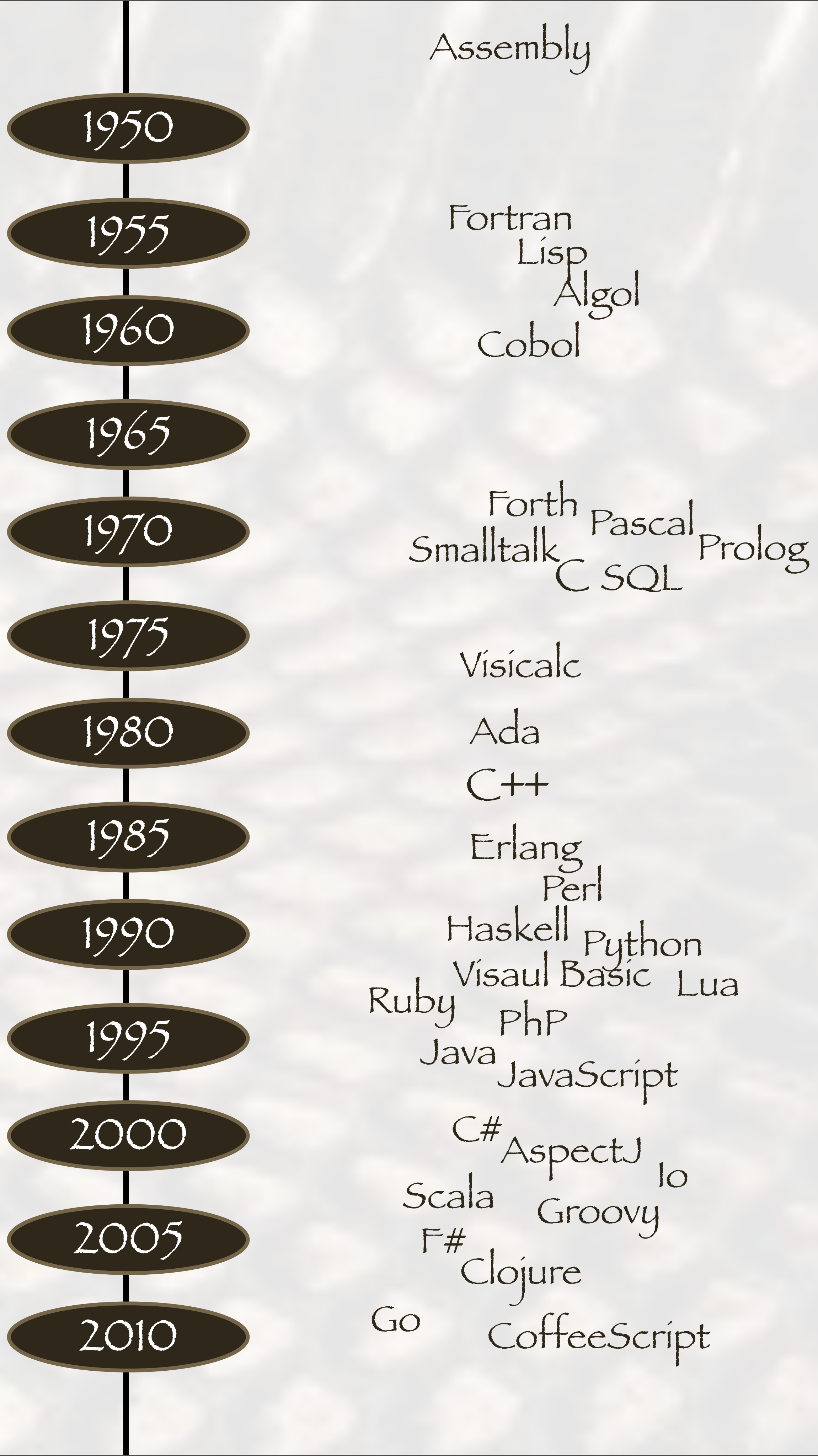
Experiencing a period of misfortune or inability to succeed.

Bruce's Extension:

due to a SOLUTION

to a PROBLEM

with UNINTENDED CONSEQUENCES



Assembly

1950

Fortran

1955

Lisp

Algol

1960

Cobol

1965

Forth

Pascal

1970

Smalltalk

Prolog

C SQL

1975

Visicalc

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Ada

C++

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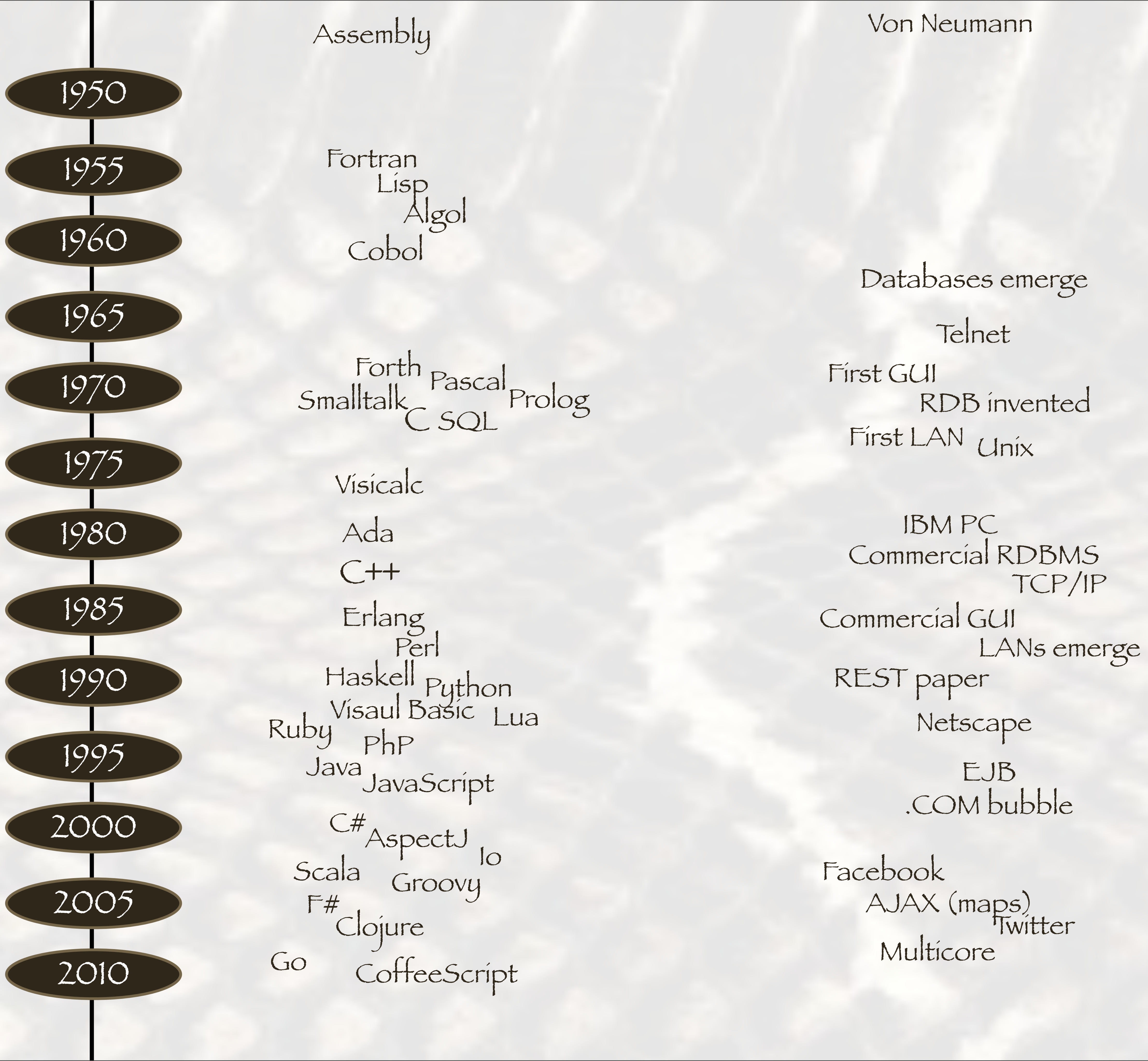
CoffeeScript



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Von Neumann

Databases emerge

Telnet

First GUI

RDB invented

First LAN

Unix

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Commercial RDBMS

TCP/IP

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LANs emerge

REST paper

Netscape

EJB

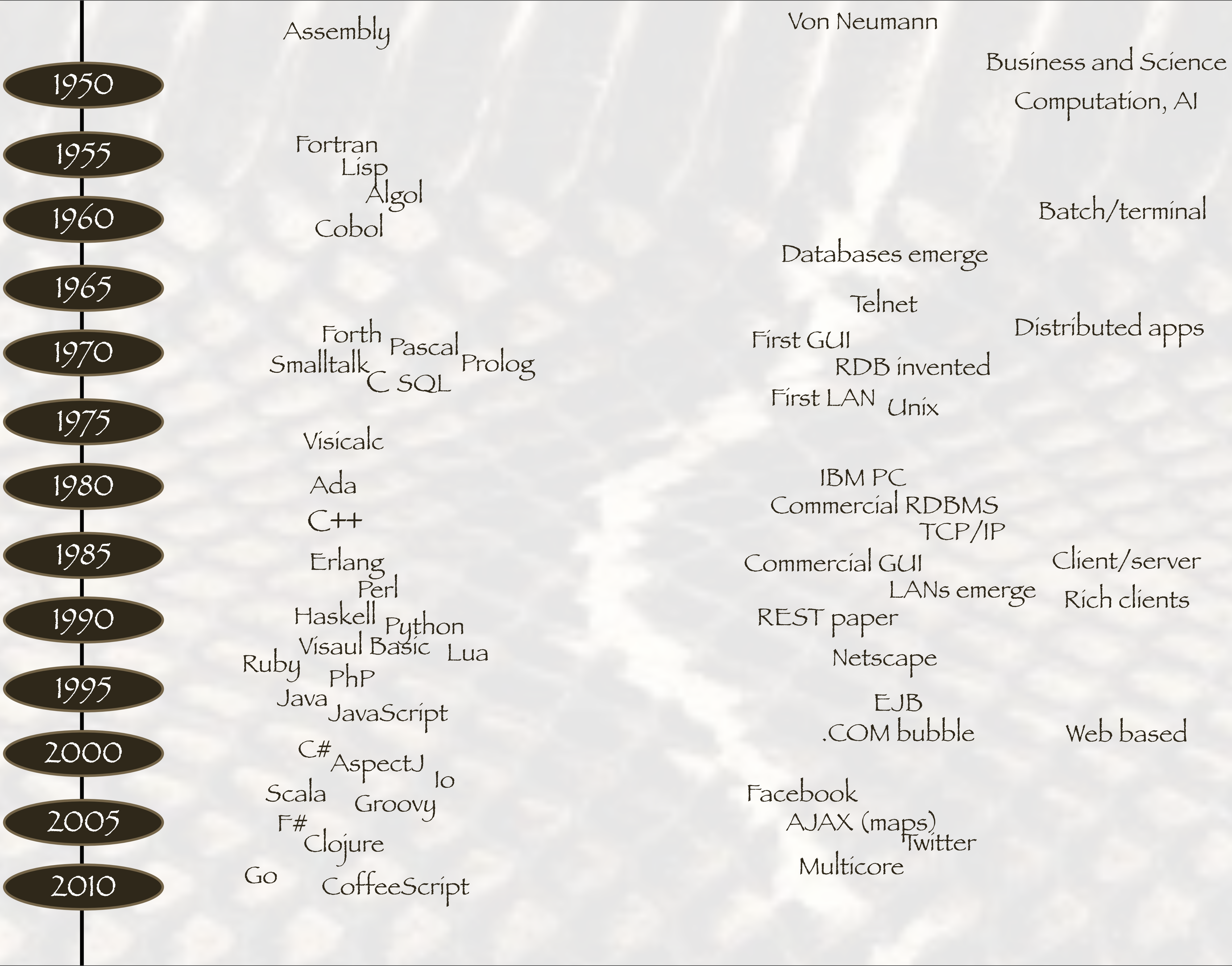
.COM bubble

Facebook

AJAX (maps)

Twitter

Multicore



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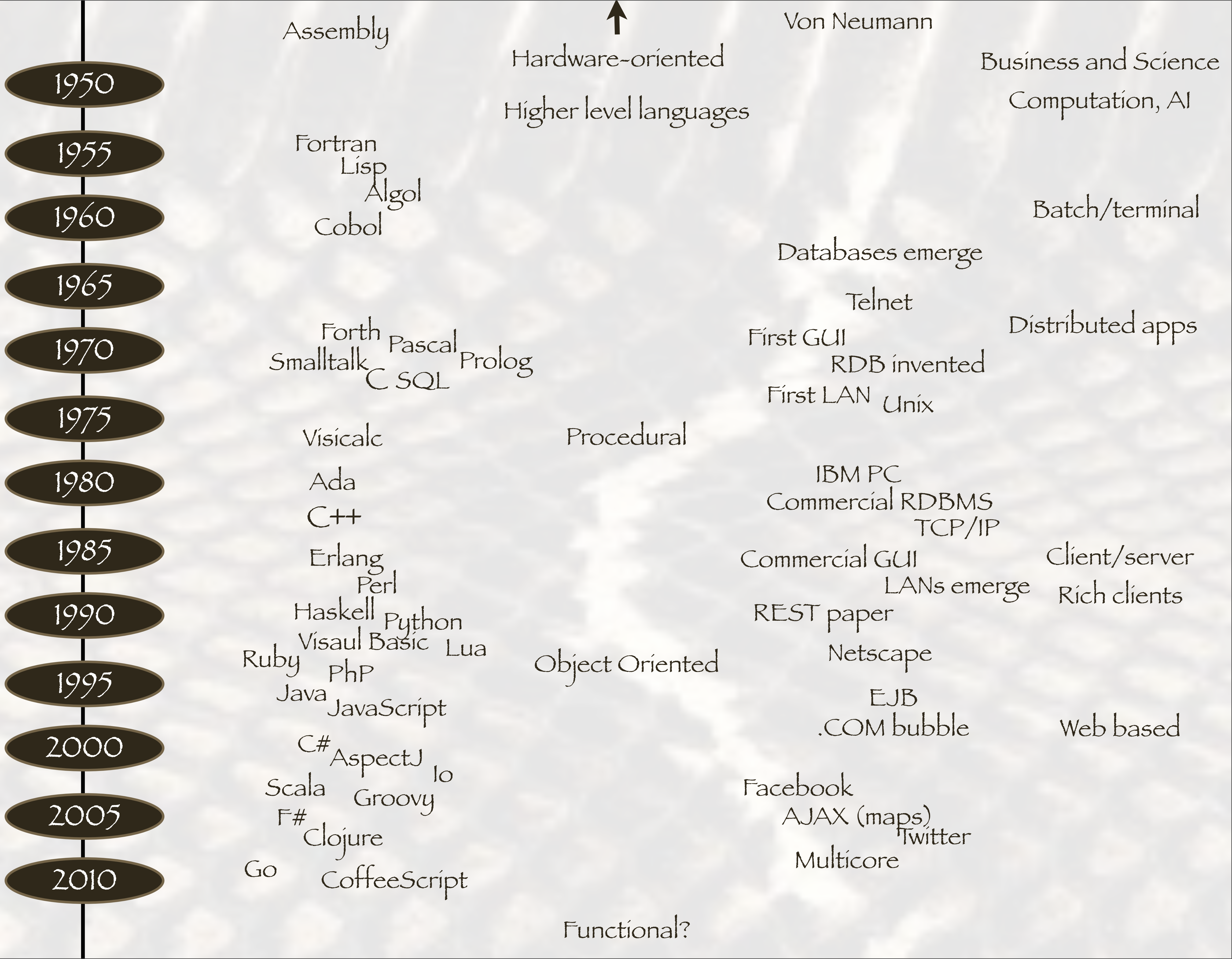
Business and Science
Computation, AI
Batch/terminal
Distributed apps
Client/server
Rich clients
Web based



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Hardware-oriented

Von Neumann

Business and Science

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Higher level languages

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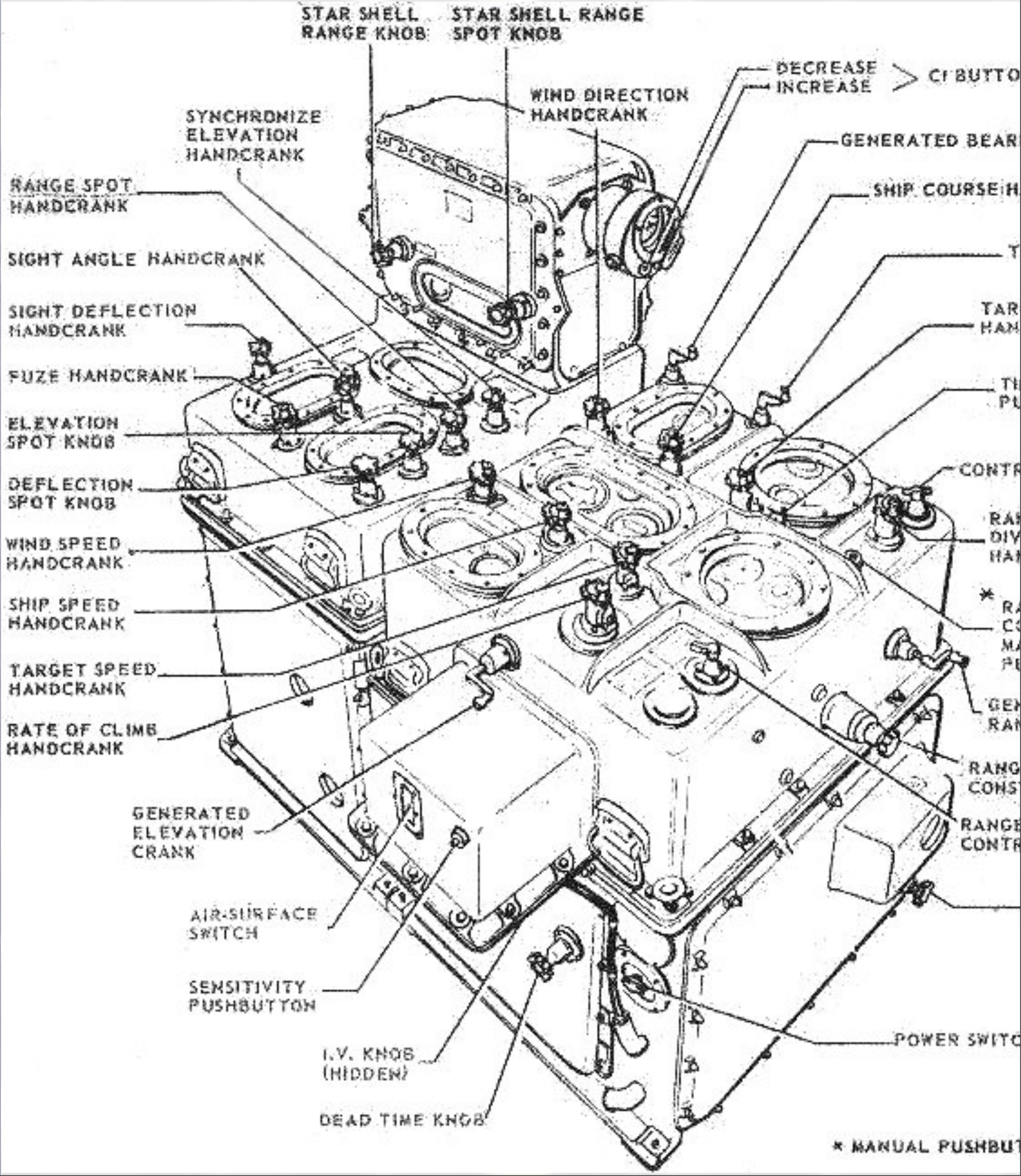
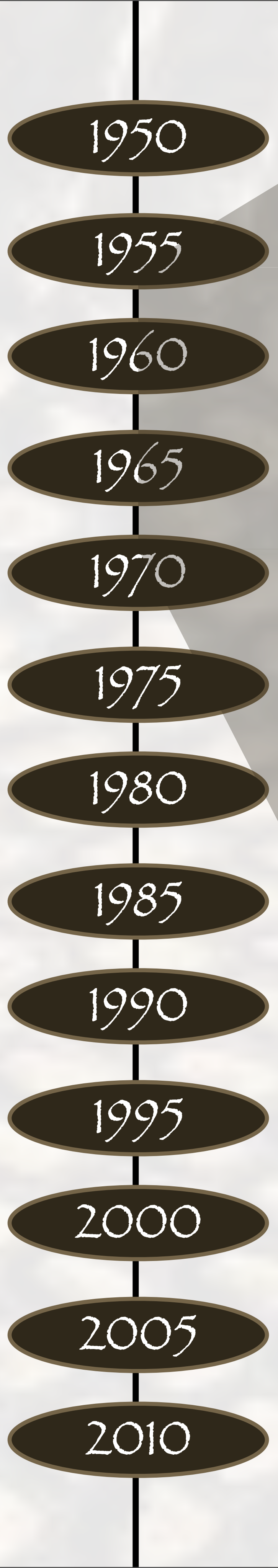
Assembly

Hardware-oriented languages

Mark I Computer





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HIGH LEVEL LANGUAGES

Fortran

Algol

Lisp

Cobol

2 Tier ARCHITECTURE

Business,

Science,

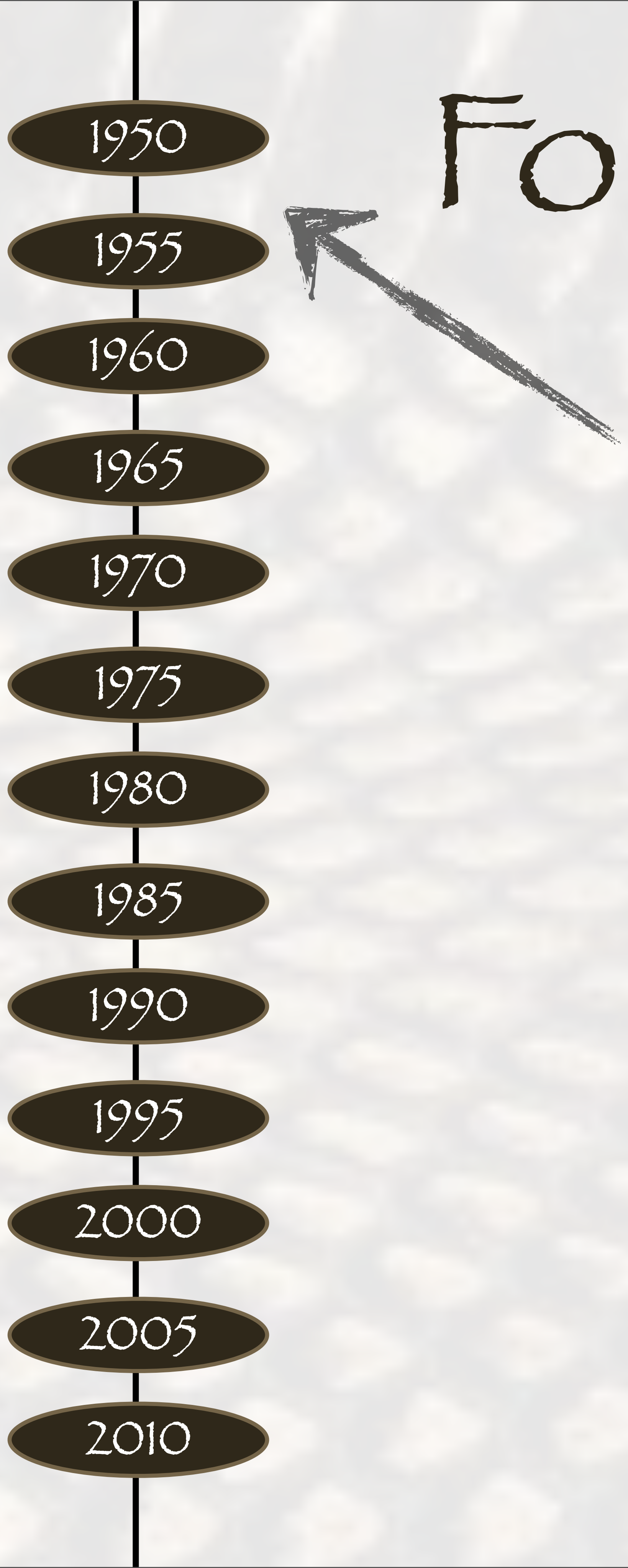
AI

Databases

Fortran, COBOL

VS

LISP



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DEATHMATCH

LISP

FORTRAN, COBOL

(LISP)

FORTRAN, COBOL

(　　LISP　　)

FORTRAN, COBOL

(LISP)

FORTRAN, COBOL

(LISP)

FORTRAN, COBOL

(LISP)

FORTRAN, COBOL

(lisp)

FORTRAN, COBOL

(||||)

FORTRAN, COBOL

0

FORTRAN, COBOL

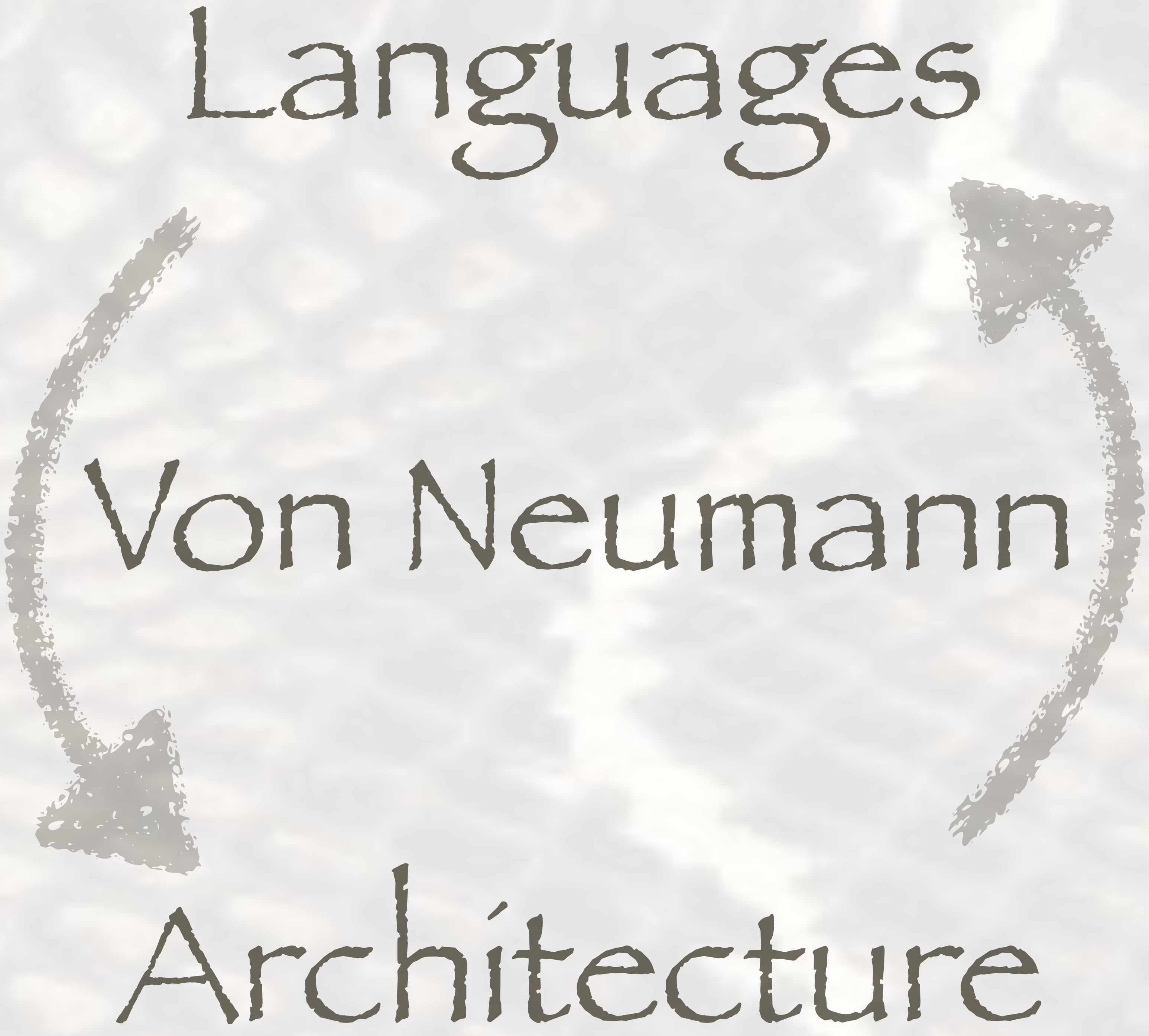
FORTRAN, COBOL

```
    C     SWAP X,Y
    C
100       TEMP = X
          X = Y
          Y = TEMP
```

changing values

mutable state

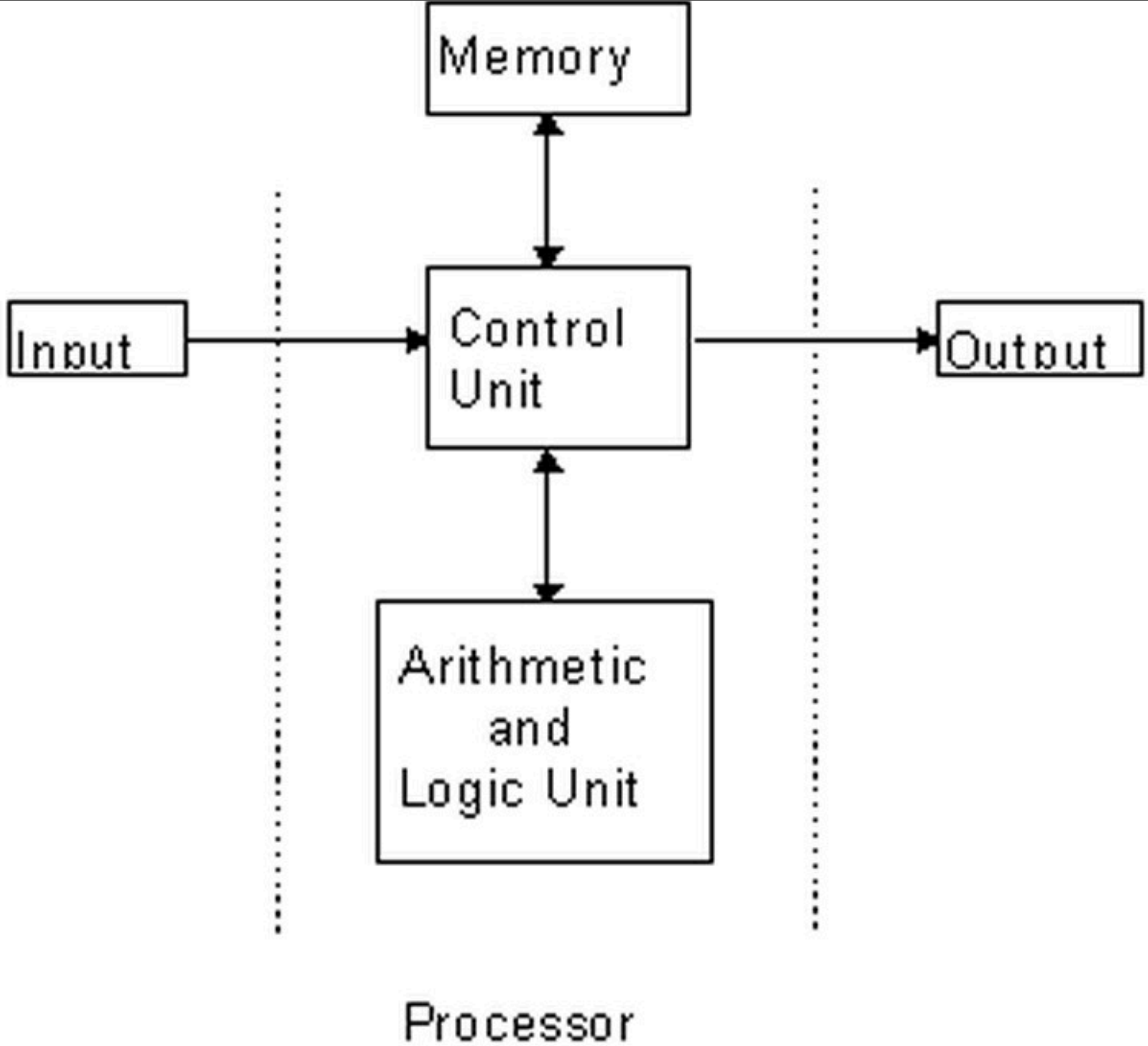
binding Identity to Value



Languages

Von Neumann

Architecture



Memory

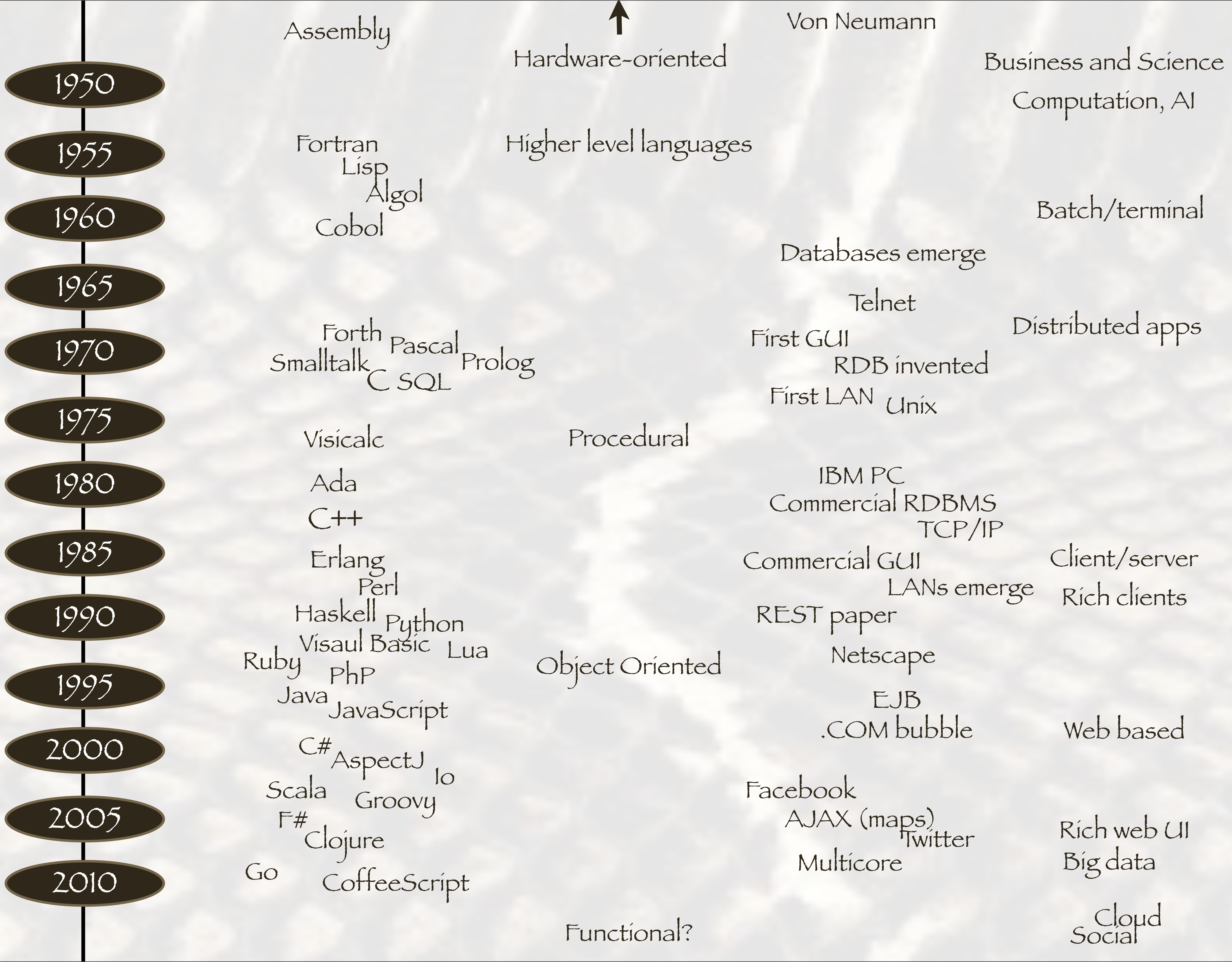
Input

Control Unit

Output

Arithmetic and Logic Unit

Processor



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Cloud
Social

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CLIENT-SERVER

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Commercial RDBMS

DEATHMATCH

```
Transcript show: 'hello world'.
```

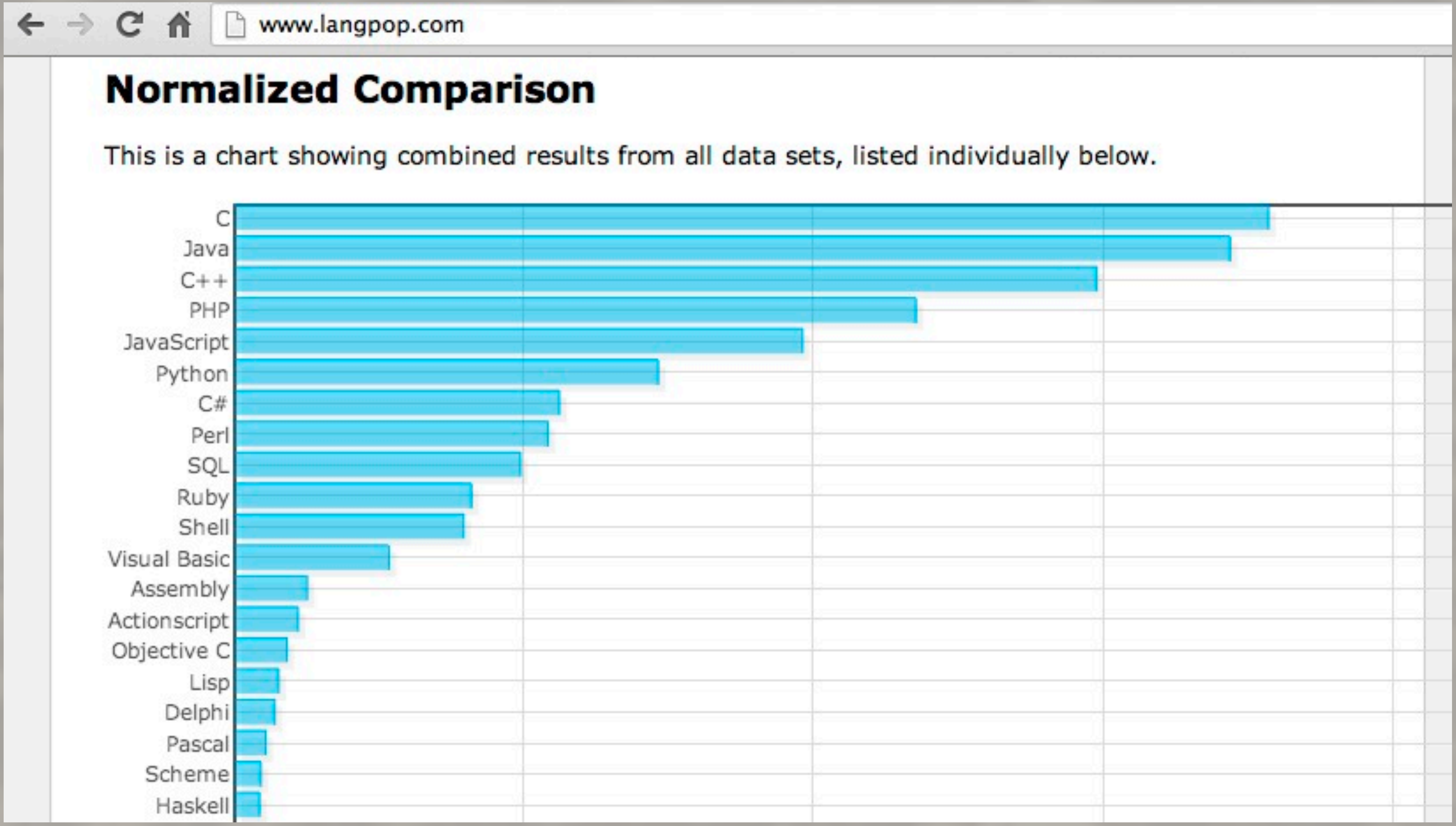
```
#include<stdio.h>
main()
{
    printf("Hello World");
}
```

C Smalltalk

Smalltalk

C

langpop.com



Normalized Comparison

This is a chart showing combined results from all data sets, listed individually below.

- Explicit allocation
- Bit-level control
- Weak, flexible types

+ Garbage collection
+ String manipulation
+ Reliability

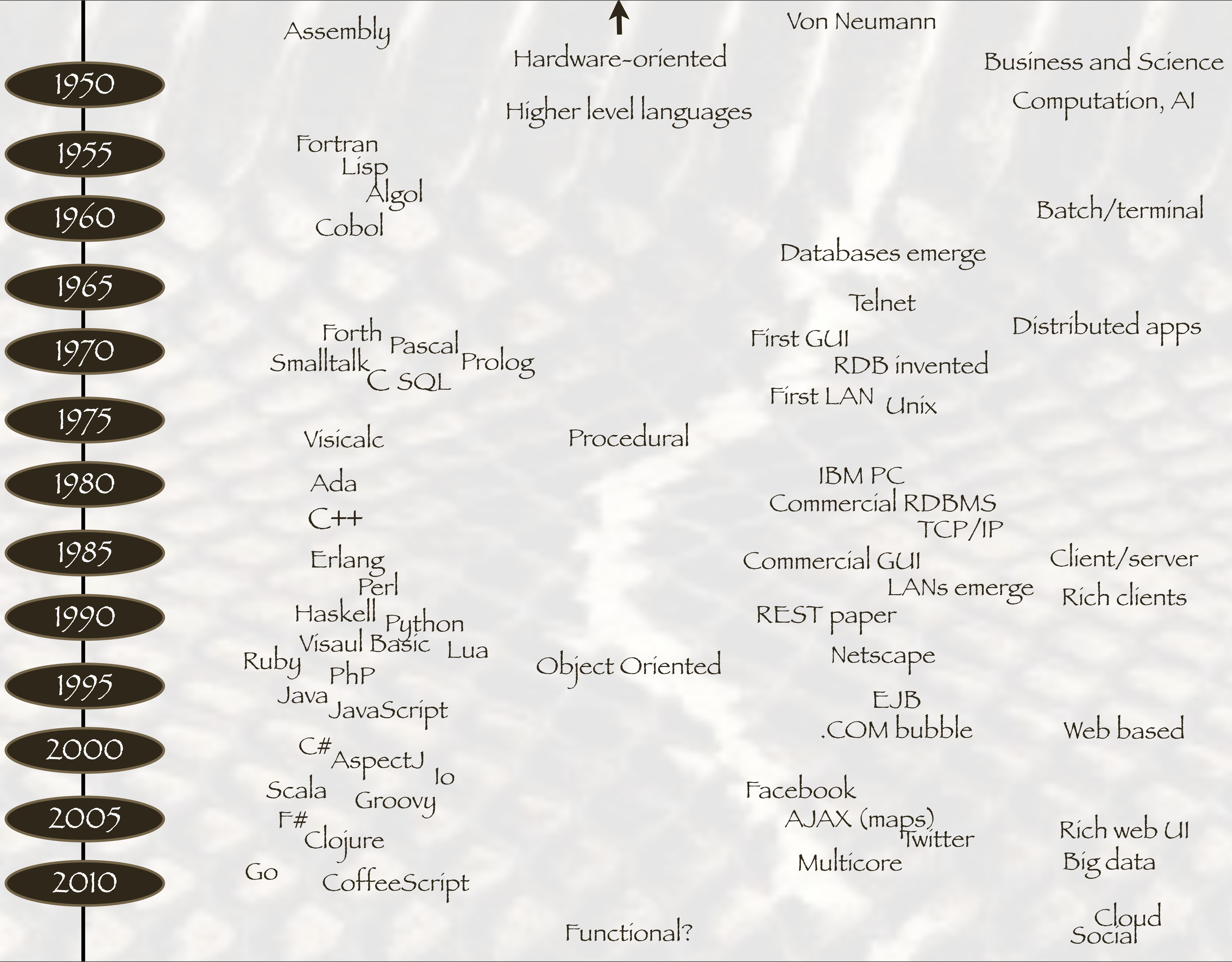
– Control

+Productivity

– Performance

+Expressiveness

- Paradigm (imperative)
- Syntax
- Type system
- Idioms



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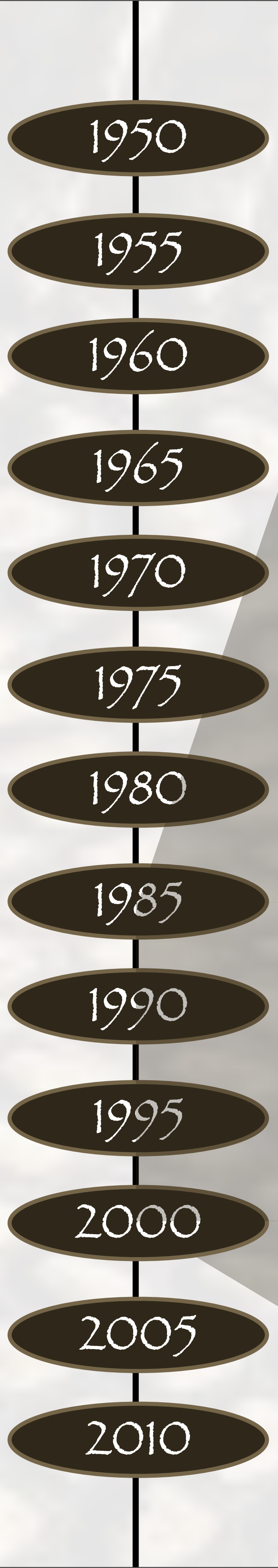
Functional? Cloud

Social



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TCP/IP

Deployment

- Deployment
- Complexity
- Costs

DEATHMATCH

Java

Smalltalk

Smalltalk

Java

Smalltalk

||

Java

X

Java

Java Visual Basic

Visual Basic

Java

Visual Basic

||

Java

X

Java

Java

Java TRTFTJ

TRTFTJ

Java

TRTFTJ

||

Java

X

Java

Java

Java

- Static
- Explicit
- Nominal

- Static (dynamic)
- Explicit (inferred)
- Nominal (structural)

- When do you bind?
- How much do you type?
- What do you mean?

- Component models
- Containers
- Specialty

```
class Nil
  def blank?
    false
  end
end
```

```
class String
  def blank?
    self == ""
  end
end
```

```
class Object
  def blank?
    true
  end
end
```

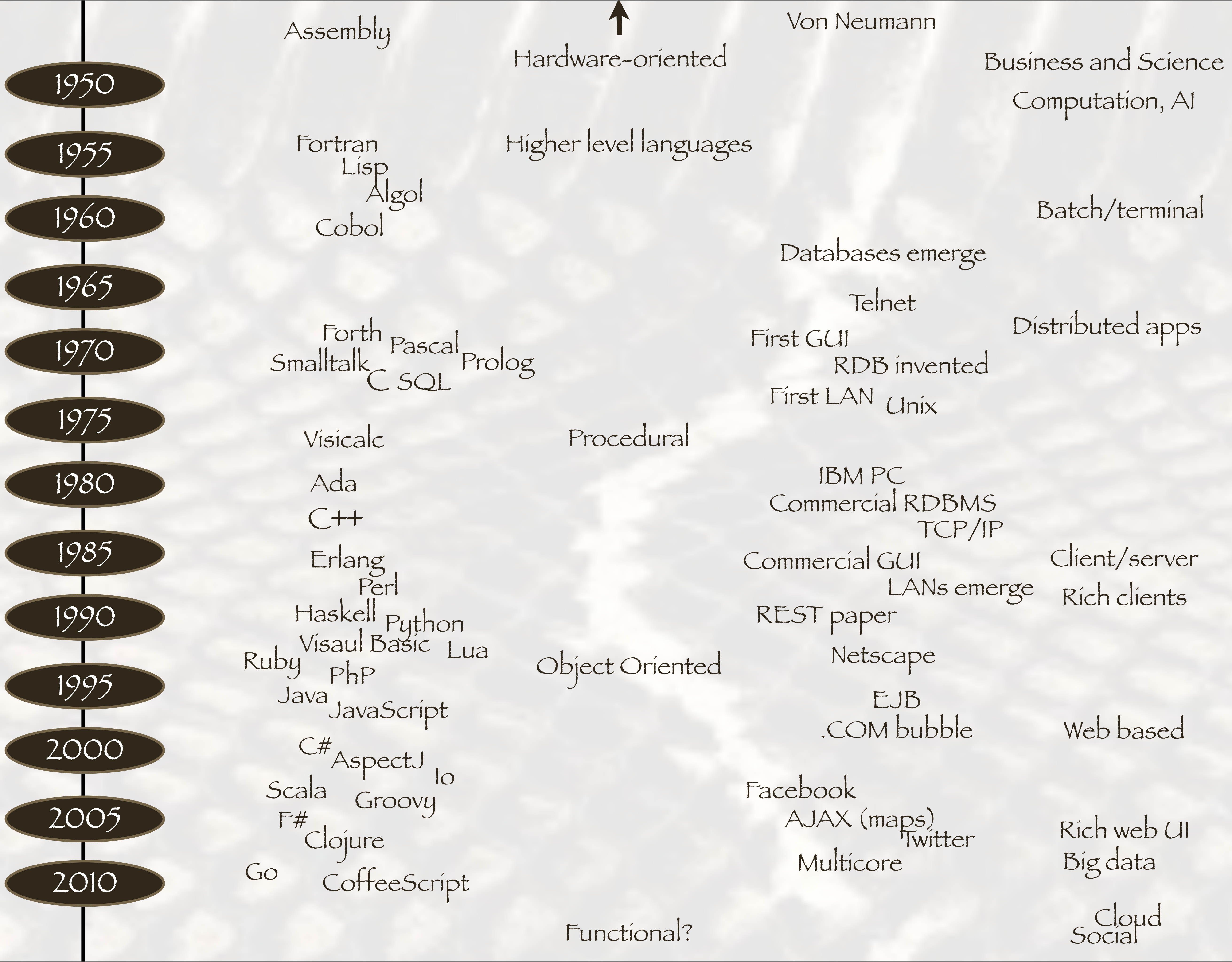
```
"".blank?
```

Java

Java

Java

Java



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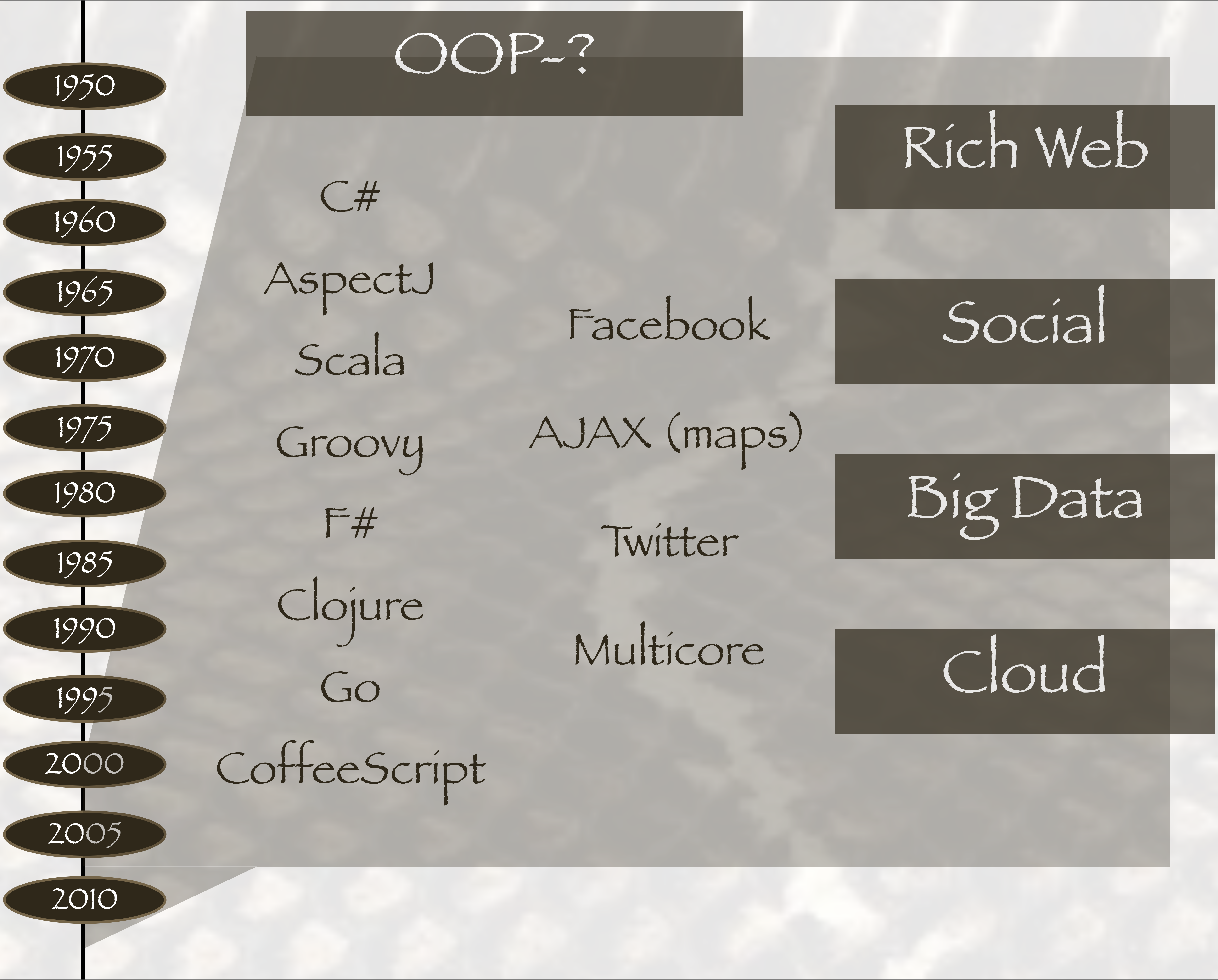
OOP-?



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Functional

Integration

Why do languages emerge?

They solve A PROBLEM.

Why snakebites?

We apply a SPECIFIC solution to a GENERAL problem

What can we do?

Sell

Embrace

Love

?