Theory of Science & Free Thinking

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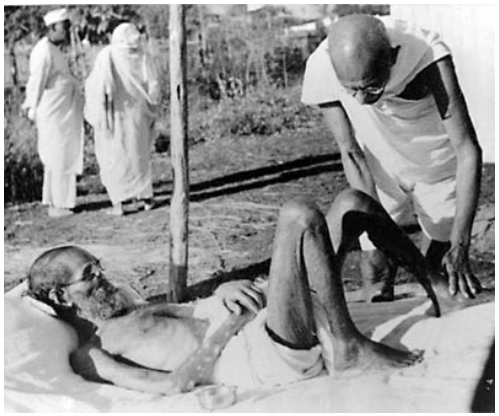
The Road to Knowledge? Simple:
Err, and Err, and Err again
But Less, and Less, and Less

Piet Hein

The Father of Nonviolent Resistance: Mahatma Gandhi

I really do like Your Christ - but dislike Your Christians
Why can'tYyour Christians be more like Your Christ?

LORD WILLINGDON'S DILEMMA

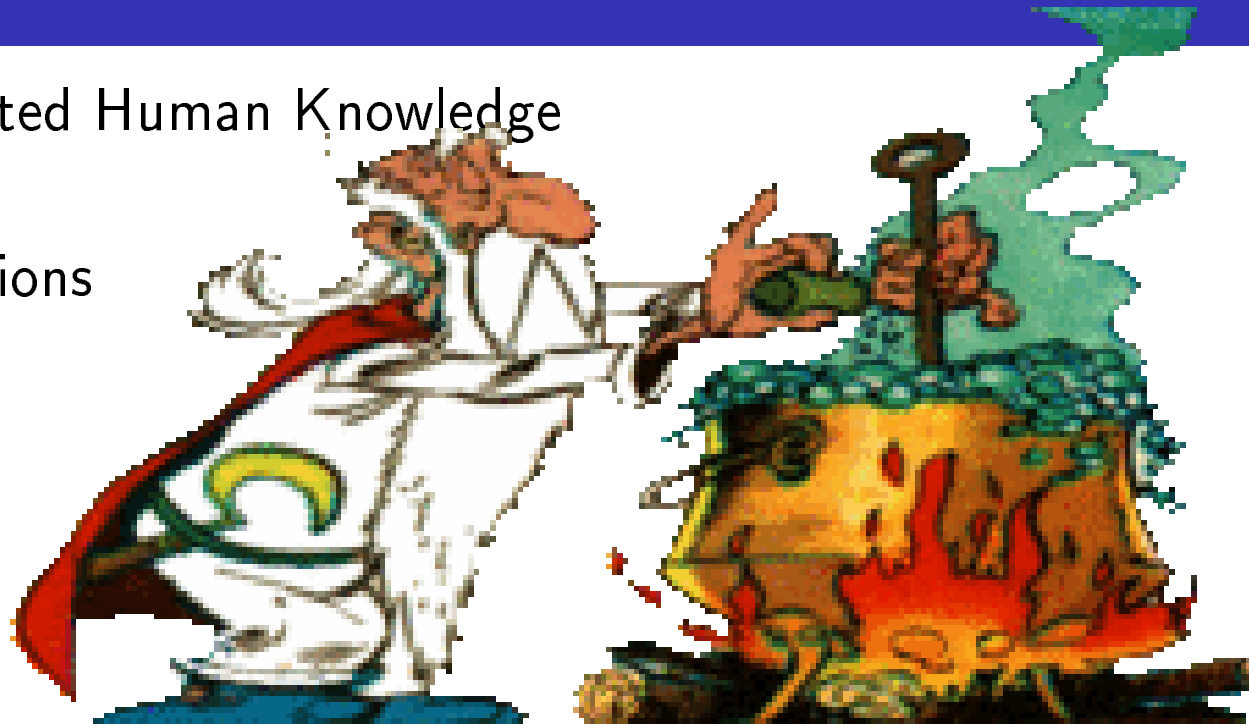


Live as if you'll die tomorrow
Learn as if you'll live forever

I'm so Free

- Copenhagen, 11/01/1964
- Math since Always
- First Program, 1980
- Travels, 1986: Personal Convergence
- Ms. in Engeneering, 1990
- Programming, 1991
- PhD in math, 1996
- Systems Administrator, 1991
- Brasil, 2002
- UEG - Prefeitura - FAI
  Professor + Coord. de Informática
- IME, UFG

Ciência



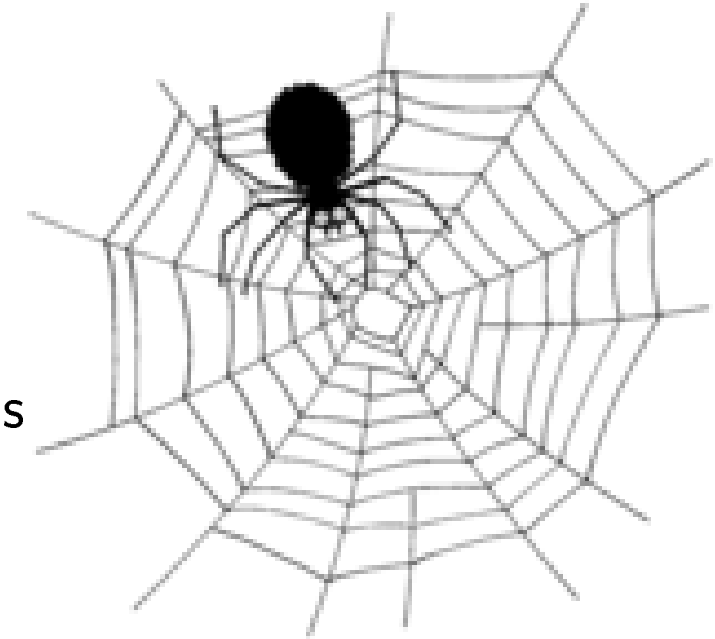
- Science: Accumulated Human Knowledge
- Knowledge:
  - · Facts & Explanations
  - · Incontestables
  - · Reproduzables
- Objectivity:
  - · Observer | Object
- Fundamentals:
  - · Human – Exact (– Social?)
- Universal Sciences:
  - · Philosophy – Mathemathics (– Computer Science?)
- Axioms - Dogmas - Paradigms

Scientific Reasonings

- Deduction:
  - Logical Arguments
  - Math: Never needed to redoing
  - Computer Science?
- Induction:
  - Conclusion by Repeated Verification
  - Hypothesis $\rightarrow$ Theory
  - Tradition: Explanation - ***never*** Argument!!!
- Abduction:
  - Conclusion to most *plausible*
  - Cheese evaporizes at $T = 25.03^{\circ}C$, $p = 1.047$ atm....

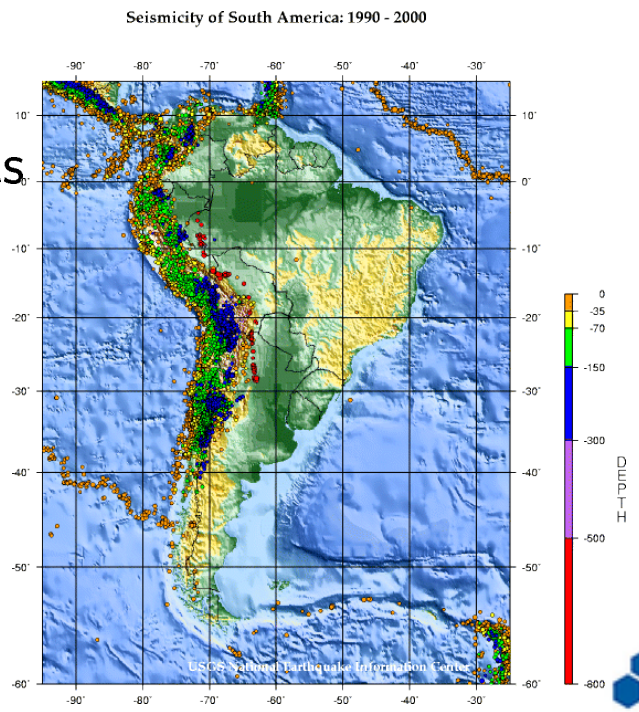
Scientific Methods

- Deductive
  - Axioms
  - Definitions
  - Theorems (consequences)
- Experimental
  - Hipothesis
  - Theory: Repeatedly Verified Hypothes
  - Varying one Factor at a Time
  - Trial & Error
  - Reproduzable
- Statistical



Axiom of Euclides

- $\parallel$ Lines never Intersects
- Lines:
  Minimum distance between points
  Geodesics
- Earth: Lines $\sim$ Big Circles
  $\parallel$ Geodesics Intersects
  $\Rightarrow$ Non-euclidean Geometry
  $\smile$ *Not* Contradictory!!!
- Projective Geometry:
  $\parallel$ Lines Intersects at Infinity



Assessment of Hipothesis

- Assimetric
- Plausability
- Simplicity - Economia de Pensamento
- Consistency
- Conservatismo - Princípio de Cautela
- Profoundness
- Versatility
- Integration
- Fertility

Science Conservative - Paradigms
Questionability - Free Science

Philosophy

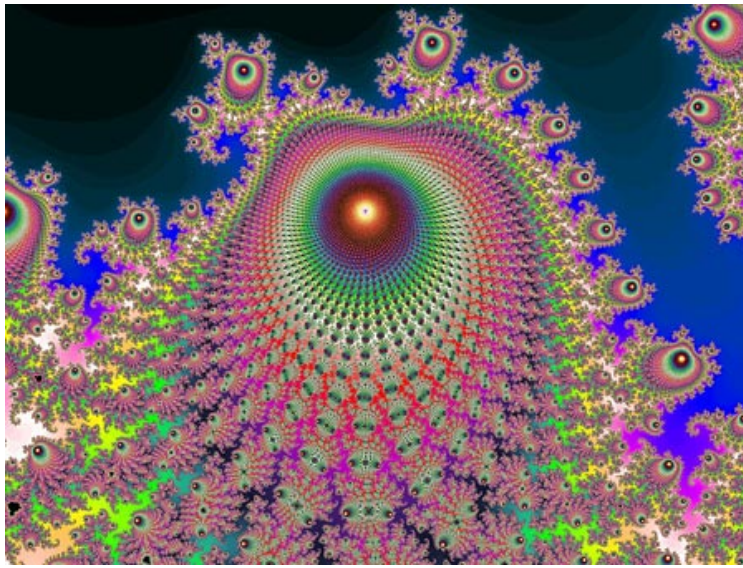
- Base of Human Sciences
- Qualitative
- Argumentative
- Reflective
- Ethics of Human Affairs:
  Technology
  Environmental
  Social
- Education for Improved Life Quality:
  Study Humans & Exacts!
- How to do Qualitative Research?
- Free Thinking $\Leftarrow$

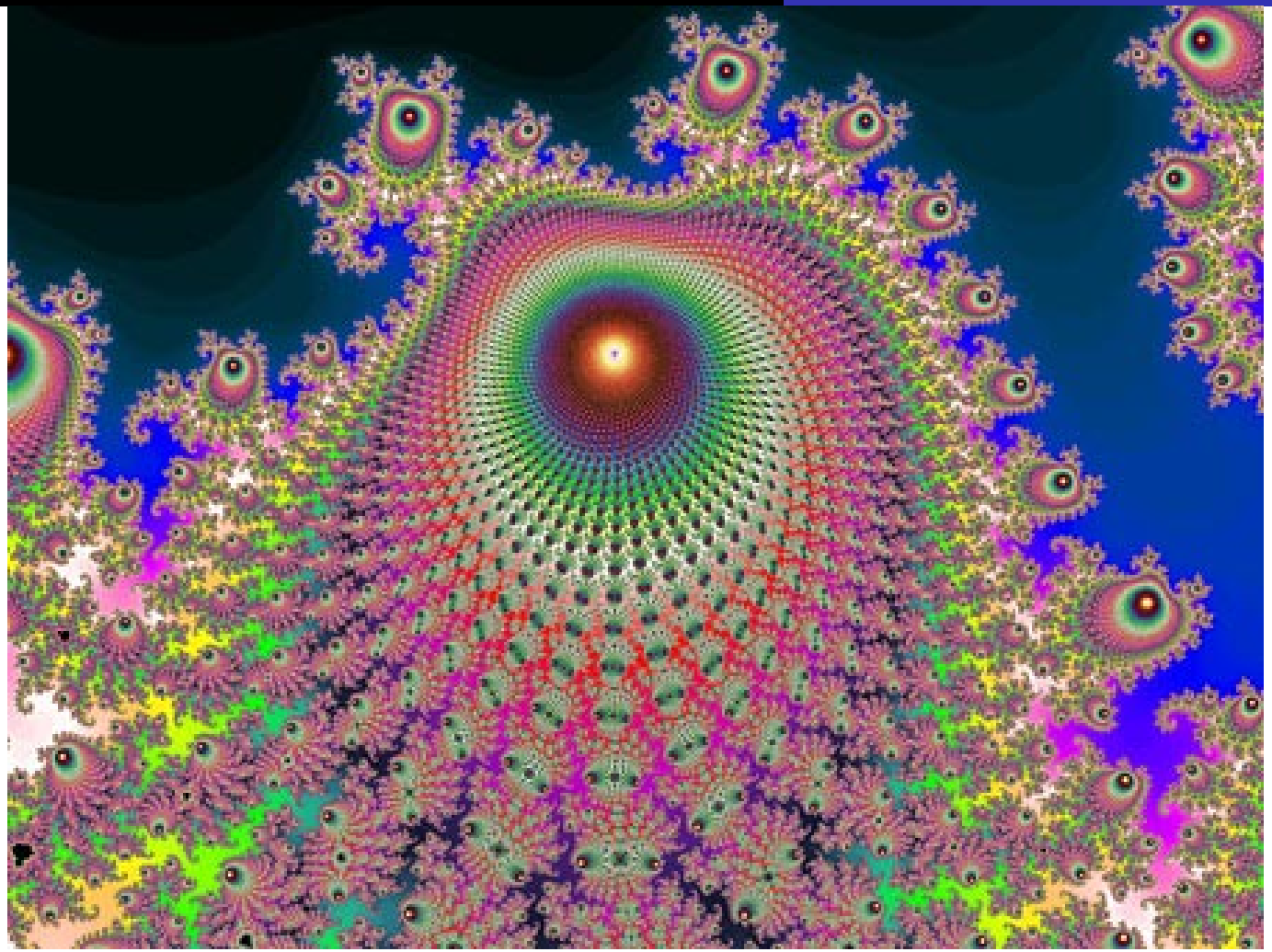
Mathematics

- Base of all Exact Science & Technology
- Logical
- Axiomatic
- Deductive
- Exact - Rigorous
- Never needed to *revise* itself
- Makes me believe in some devine force

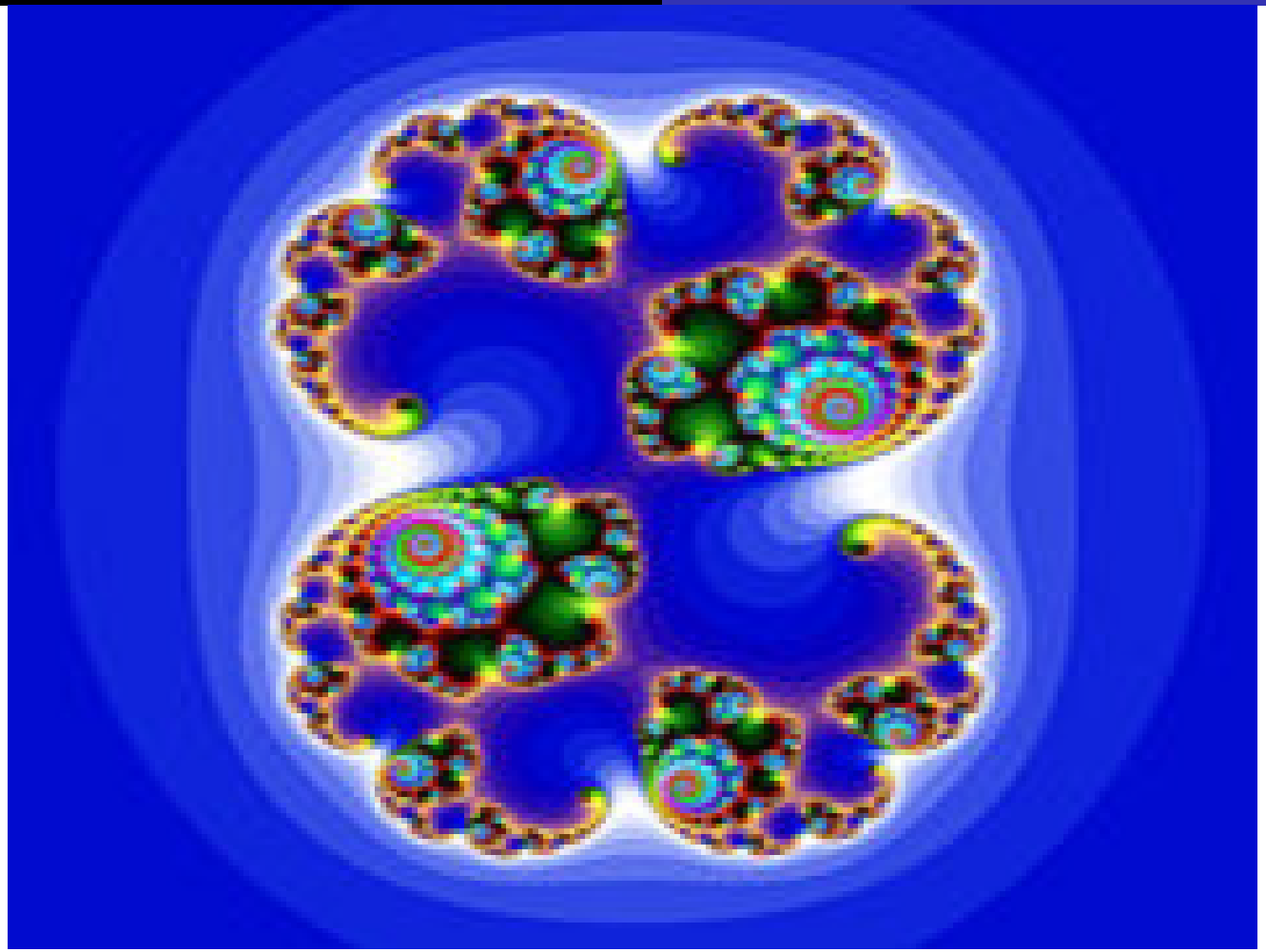
...

But doubt any religious dogmas...

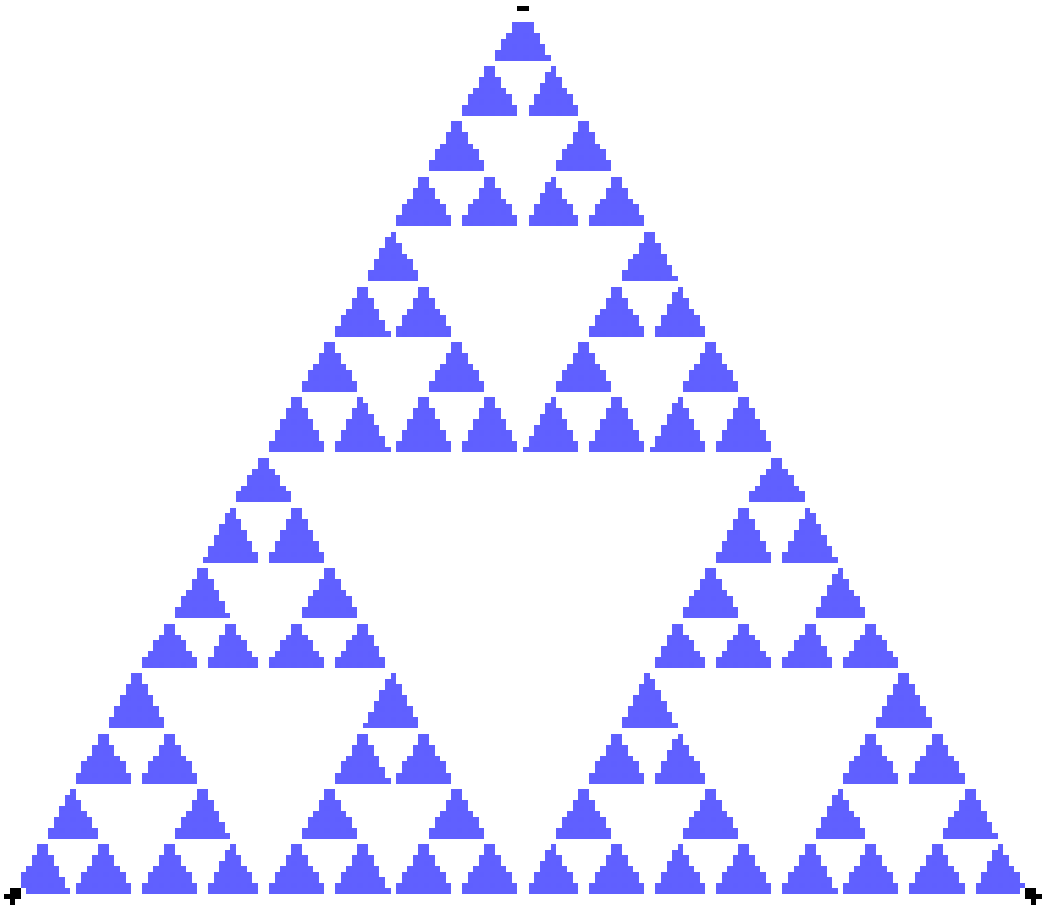




Mandelbrot - Fractal Geometry



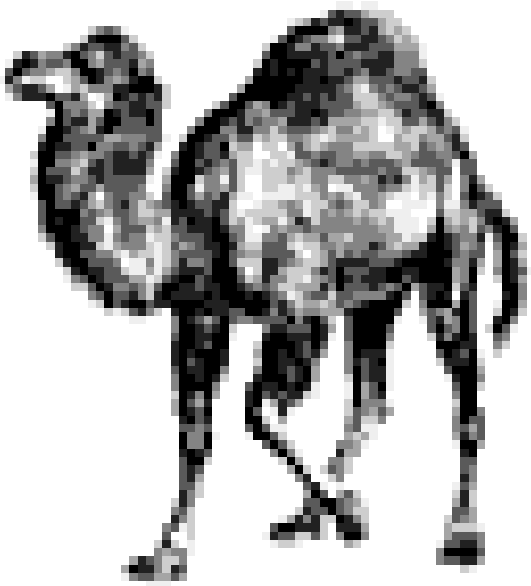
Julia Set



Sierpinsky

Computer Science

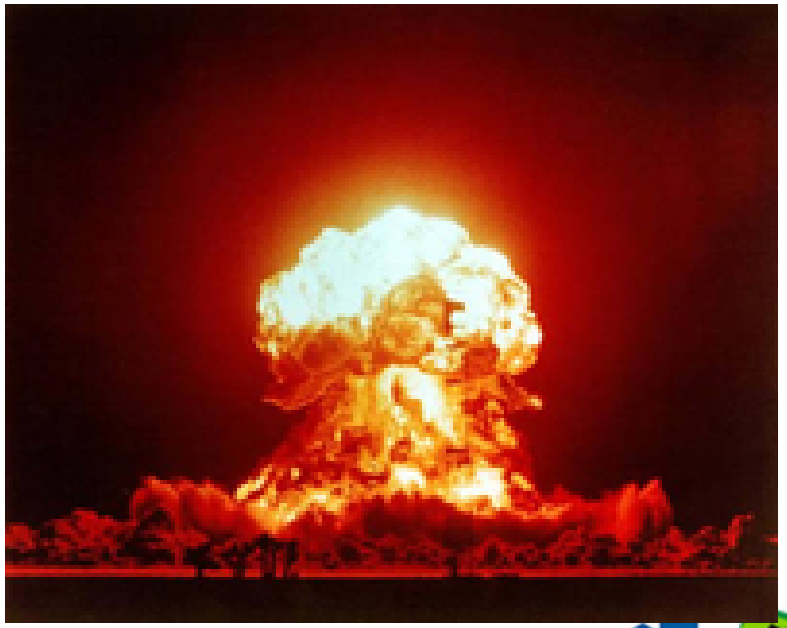
- The Lastborn..
- **Fundamental**:
  Applied by all other Sciences
- Communication:
  Democracy Fundamental
- Automation of **Repetitive** Tasks
- What You Ask...
  Isn't Always what You Want!
- Ultimate Logical Test
- **Fascinated** by Perl: Free Programming
  I'm so Free...



Ethics of Science

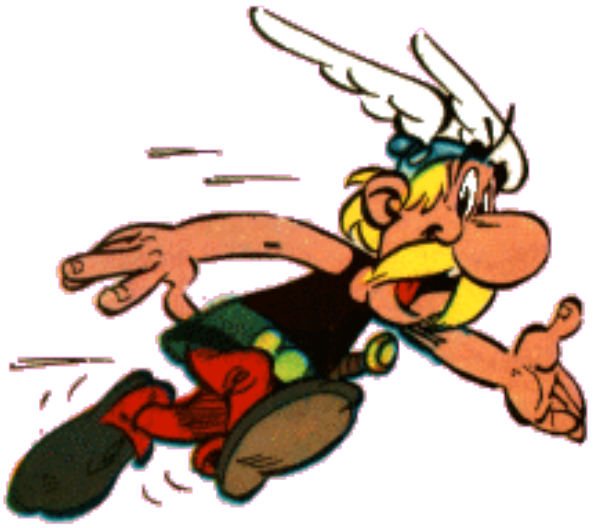
- Responsability
- Exemplos:
  - Einstein - Hiroshima
  - Placebo
  - Generic Medicine
  - Lifewests: Nazis
  - Genetics
  - Private vs. Public Research
- Use Science for the *Good*

  What is Good?????



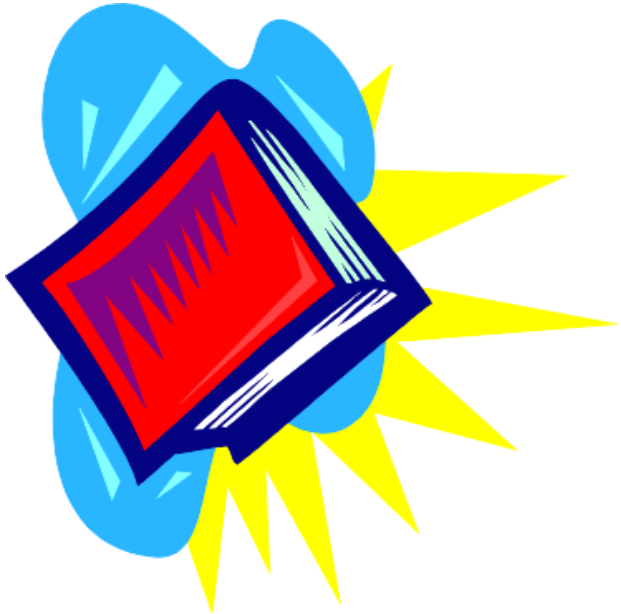
Humans. I Believe that:

- Humans are Good at the Bottom
  Too bad they're Bottomless
  When they Have theirs...
- Otherwise, they're **not** Good
- Humans: Intelligent Beasts
  Or Darwin *are* all Wrong?
  »Ideas are Immortal
- Instincts - Reflexes
- Genetical - Social
- Humans are Lazy
  Invents for their Lazyness



Society

- Theories or Dogmas?
  Socialism - Capitalism - Democracy
- UN ***not*** Democratic - Why????
  History - Traditions...
- What's the Alternatives to:
  Democracy - Free Press
  We **Must** Read!
- Youngsters - Actives - Elders
- Government: Generate Life Quality
  Environment - Education - Health
- `A Society may be Assessed by the way`
  `It Treats it's Minorities...` *Gandhi*



Free Thinking

- Freedom
- Free Thinking
- Law:

  Govern Relations *between* People

  Peaceful Coexistence
- Isonomy: Alle er Ens for Loven
- Who am I to Judge?
- Formynderi: Tutelage - Custody
  Seat Belt
  Babe take Drugs... (Lou Reed)
- Worst Problems First...
- Governments: People's Responsability

Exclusion vs. Inclusion

- Exclusion: Benefits Whom?

  Included Individuals Contributes
- Education:
  Seed - Semente - Semilla
- Harvest Happens *after* Seeding
- Exclusion Harms Society
- Inclusion Benefits Society
- Respect Generates Respect
- Humans - Conflicts - Instincts
- Us & Them: WWII - Ruanda - Iuguslavia
- Free People - Free Society $\frown$ Environment

Quasimodo

Free Software

- Free to: Use - See - Modify - Redistribute
- Scientific Software
  · Reproduzability ⇒ Open Source
- Free Movements: Inclusion
- Anti-Monopolies
  Closed Knowledge is Science?
  Free Education
- Scientific Programming - Free+Open
- Individual Economical Systems
  ↦ Geographically Hierarchical
- We *must* Believe in Change
- Obrigations First - then Rights

Mik-Mik...

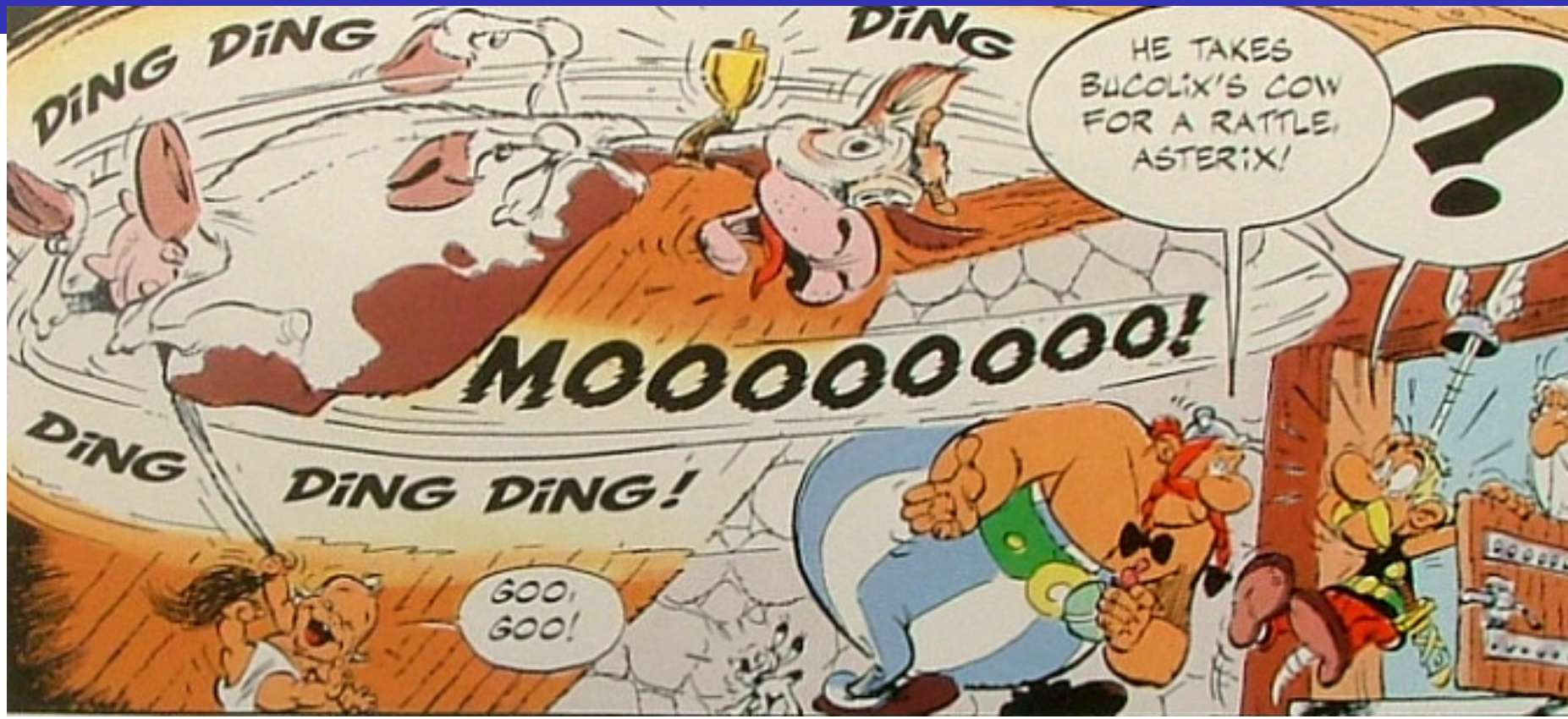
Free

- Why the Free in SL?
- What is it to be Free?
- Socially - Filosofically
- Free:
  Thinking - Science - Education
- Free Press
- Natural Selection
- Environment & Recycling
- Nothing more Fertile than Ideas
- Appeal to the Non-beast
- Freedom under Responsibility

Conclusion

- Informática - Universal ⇒ Responsa
  Interdisciplinaridade
- Software Livre ⇒ Pensamento Livre ⇒ Sociedade Livre
- ASL-GO - PSL-GO
  SLOG - Anapolivre - GULOGO
- Flisol
- FGSL: 10-11/12/2010, GYN
- Join!
- Curious - Critical: Why?
- Please always enjoy!
- Question Your Dogmas... Be Free

Thanks



Life Sure is a Mystery to be Lived
Not a Problem to be Solved