Theory of Science: Free Thinking & Free Software

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IV ENSL
06/11/2010, Natal-RN

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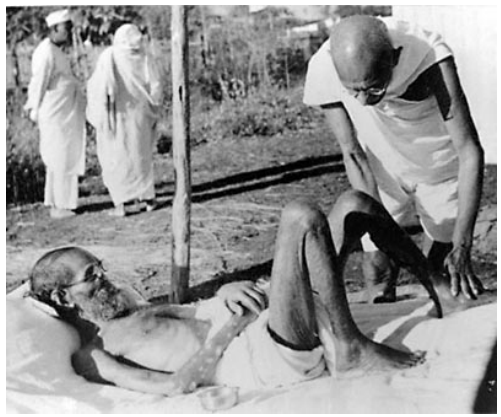
Meu esforço nunca deve ser o de diminuir a fé do outro
Mas torná-lo um melhor seguidor de sua própria fé
Mahatma

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



Quem leva brincadeira somente por brincadeira
E sério somente sério. De fato, desentendeu ambos - *Piet Hein*

I'm so Free

- Copenhagen, 11/01/1964
- Expulso de 3 escolas...
- Math desde sempre
- 1a Programa, 1980
- Viagens, 1986: Personal Convergence
- Ms. in Engeneering, 1990
- Programação, 1991
- PhD in Math, 1996
- Systems Administrator, 1991
- Brasil, 2002-...
- UEG - Prefeitura - FAI
  Professor + Coord. de Informática
- Prof. Adjunto, IME, UFG, 2009-...

Ciência

- Science: Accumulated Human Knowledge
- Knowledge:
  - Facts & Explanations
  - Incontestables
  - Reproduzables
- Objectivity
- Fundamentals:
  - Human – Exact – Social: Exact & Human
- Universal Sciences:
  - Philosophy – Mathemathics – Computer Science
- Axioms - Dogmas - Paradigms
- Definitions - Theorems (Consequences)

Logic

- George Boole
- Boolean: 1 ou 0 - V ou F
- Proposição, P: *Ole da palestre de calsa comprido*
- Opposite: $!P$
- Proposição Composto: OR ($\vee$), AND ($\wedge$), XOR, XAND
- Truth Tables
- $[P \Rightarrow Q] := [!P \vee Q]$
- *Se quem está batendo na porta for uma mulher, ela carrega uma bolsa*

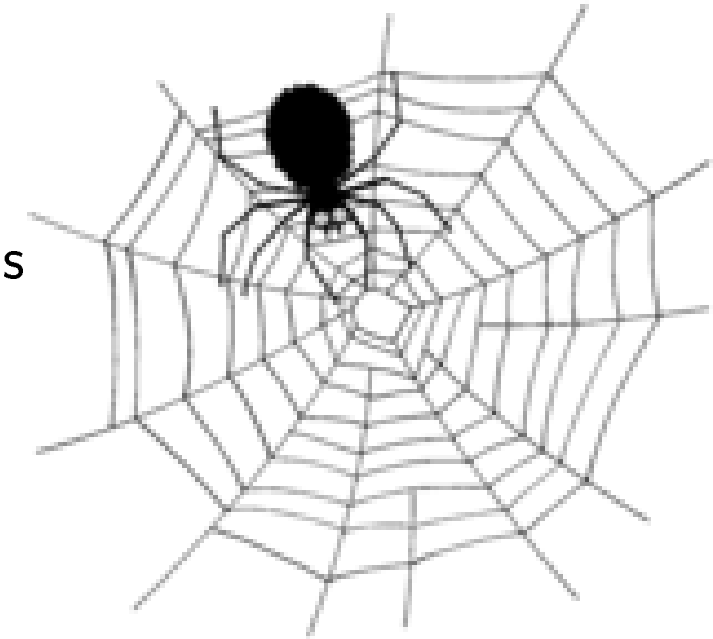
P	Q	$P \vee Q$	$P \wedge Q$	$!P$	$P \Rightarrow Q$
0	0	0	0	1	1
0	1	1	0	1	1
1	**0**	1	0	0	**0**
1	1	1	1	0	1

Scientific Reasonings

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

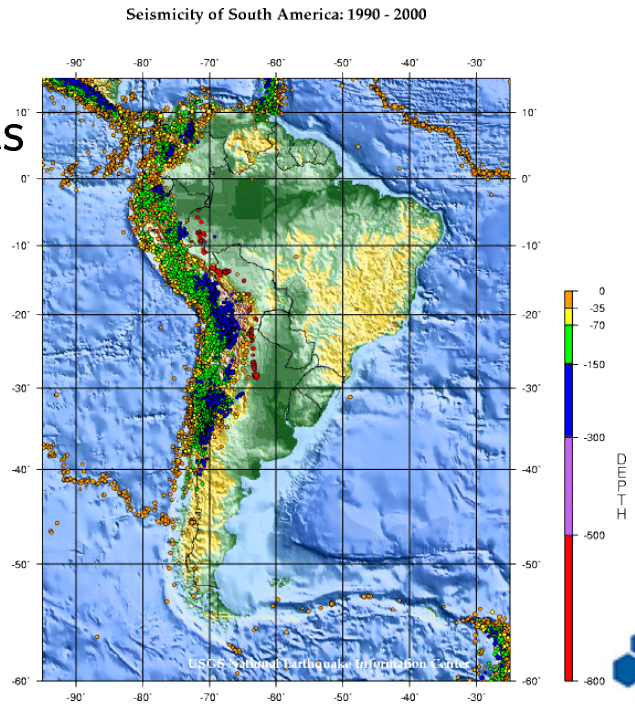
Scientific Methods

- Deductive
  - Axioms
  - Definitions
  - Theorems (consequences)
- Experimental
  - Hipothesis
  - Theory: Repeatedly Verified Hypothes
  - Vary one Factor at a Time
  - Trial & Error
  - Reproduzable
- Statistical
  - One, Two, Many (∞)
  - Médias



Axiom of Euclides

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



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

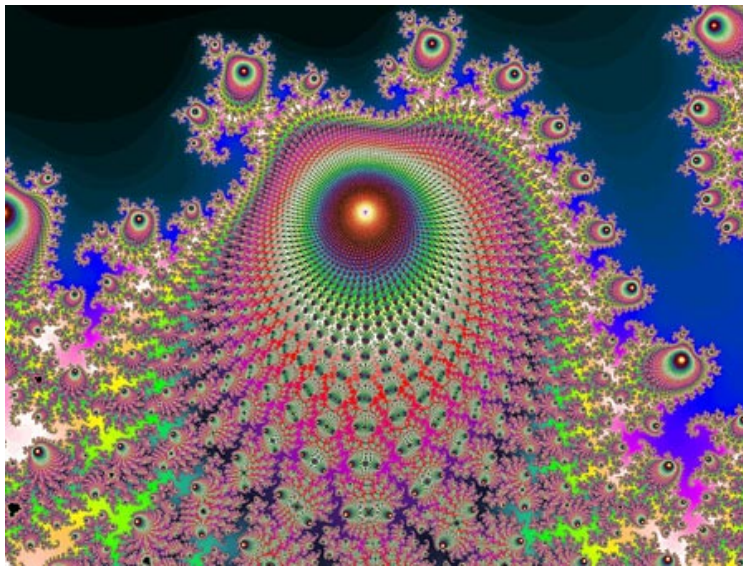
- Base of Human Sciences
- Qualitative
- Argumentative
- Reflective
- Ethics of Human Affairs:
  Technology
  Environmental
  Social
- Education for Improved Life Quality:
  Study Humans & Exacts!
- How to do Qualitative Research?
- Free Thinking $\Leftarrow$

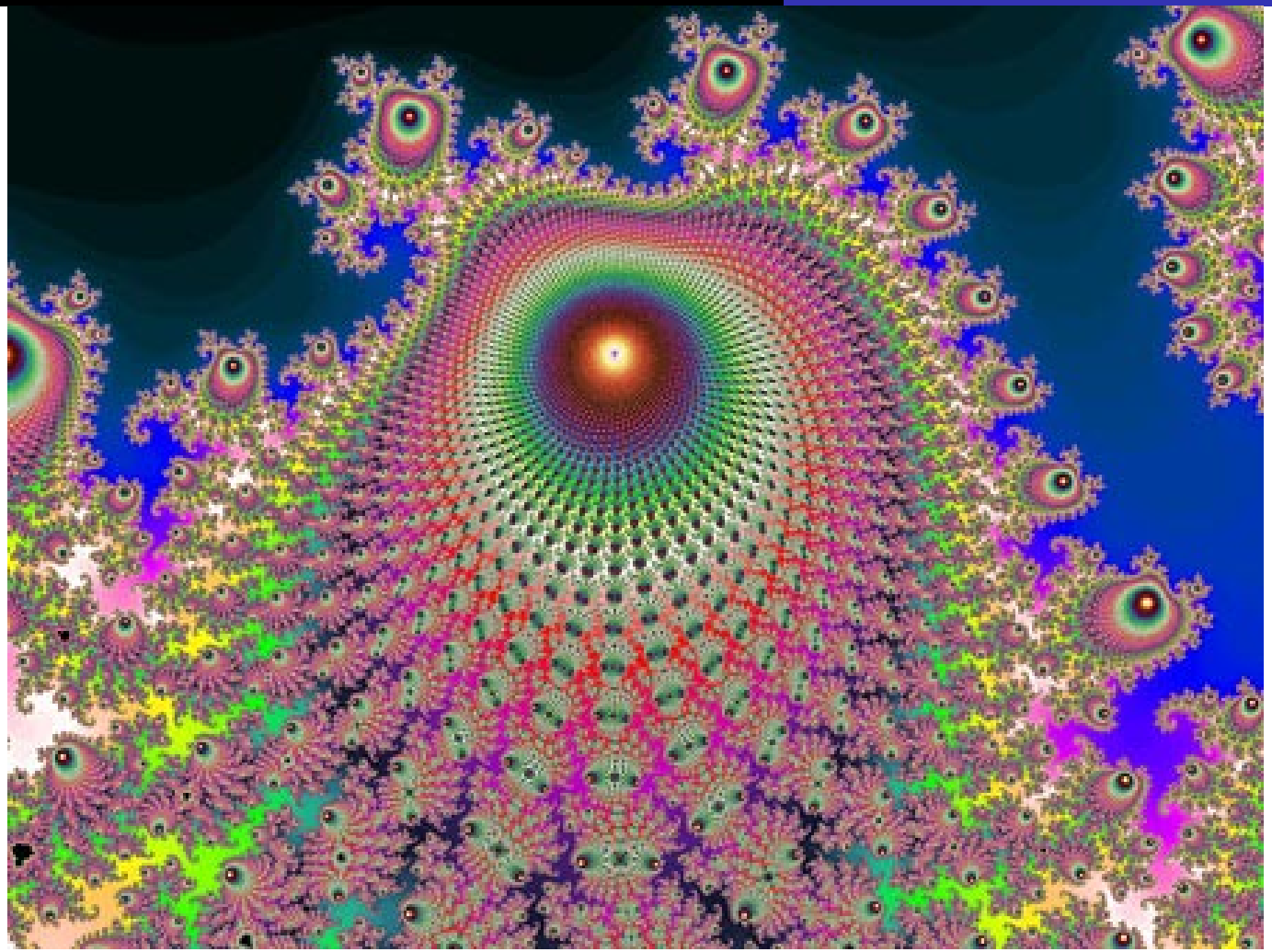
Mathematics

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

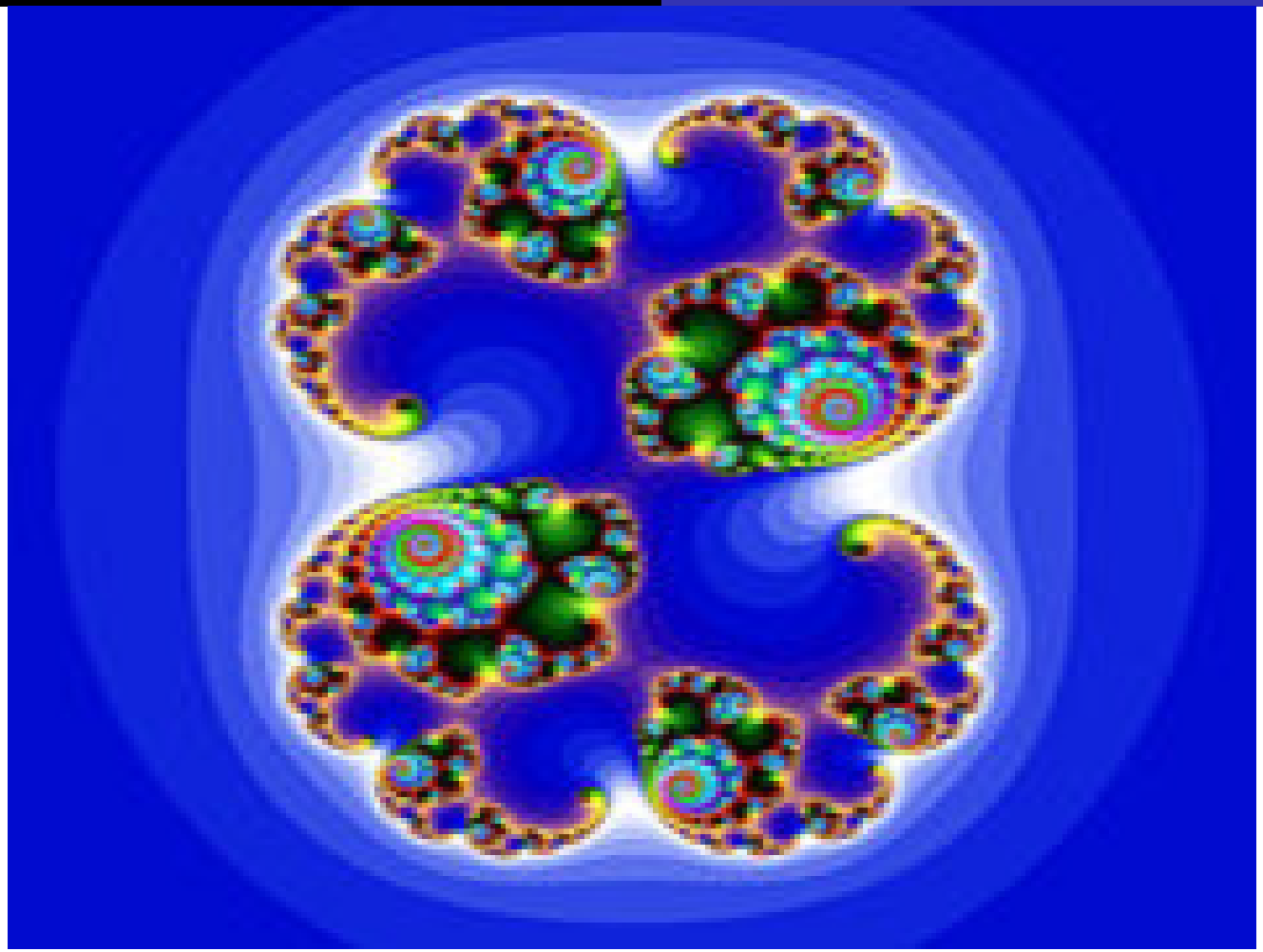
  ...

  But doubt any religious dogmas...

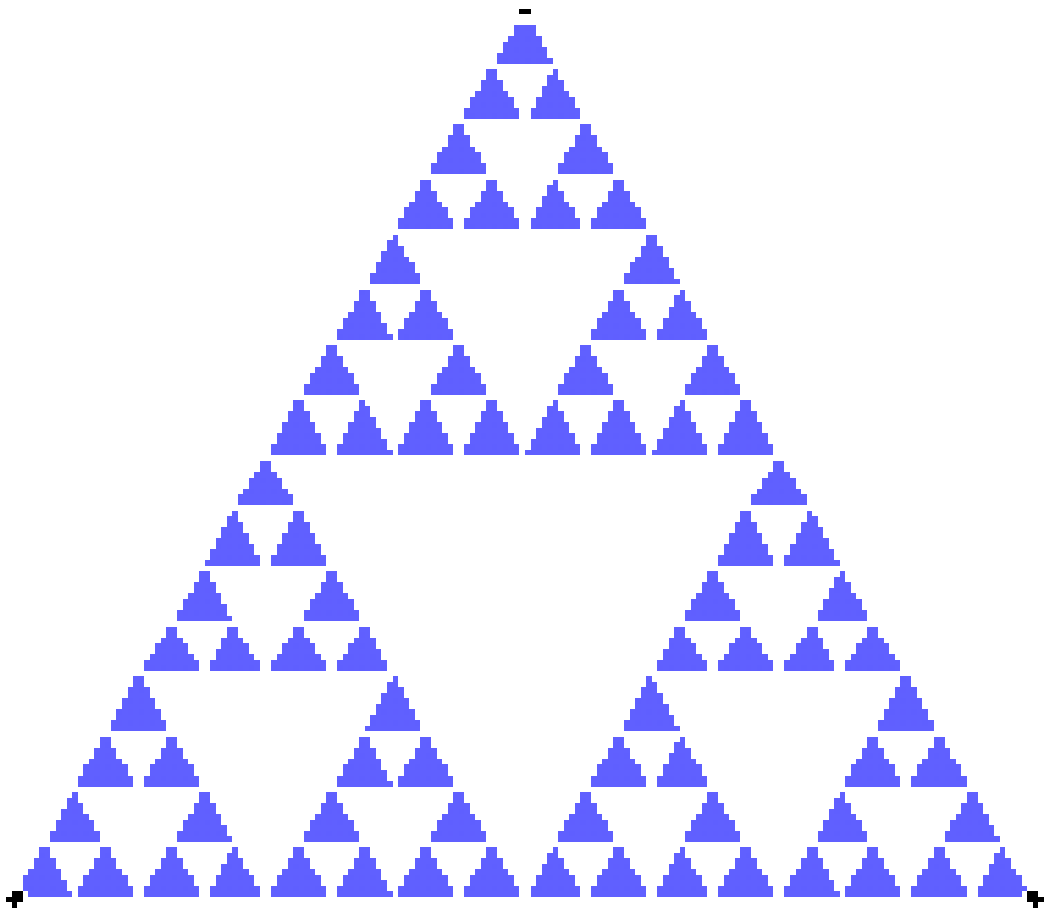




Mandelbrot - Fractal Geometry



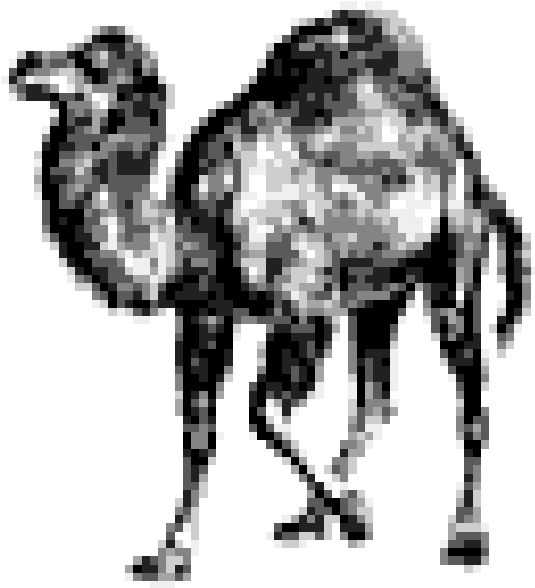
Julia Set



Sierpinsky

Computer Science

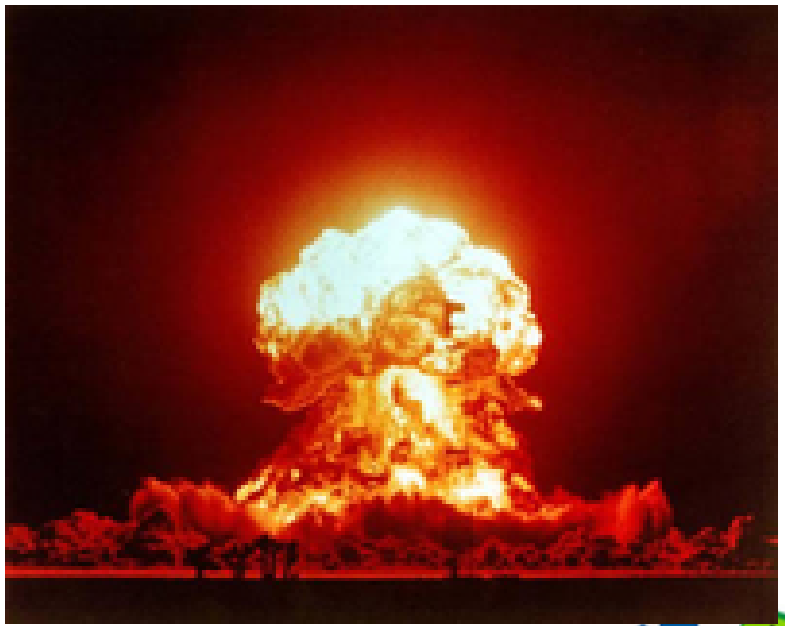
- The Lastborn..
- **Fundamental**:
  Applied by all other Sciences
- Communication:
  Democracy Fundamental
- Automation of **Repetitive** Tasks
- What You Ask...
  Isn't Always what You Want!
- Ultimate Logical Test
- **Fascinated** by Perl: Free Programming
  I'm so Free...



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?????

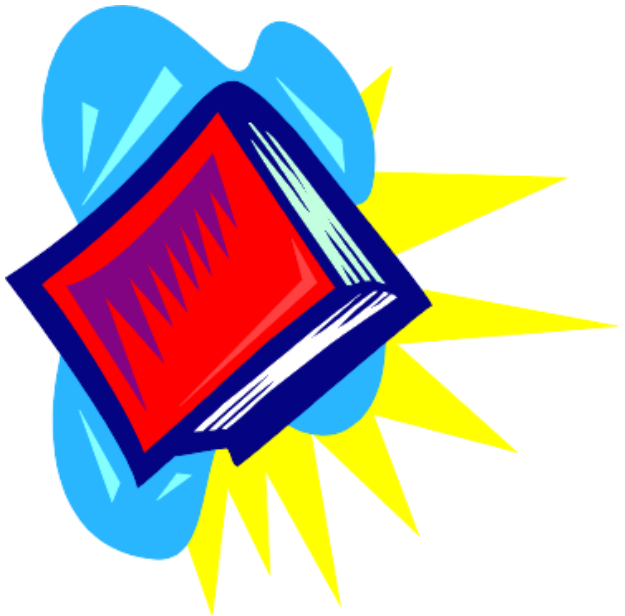


Humans. I Believe that:

- 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 ⌒ 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...

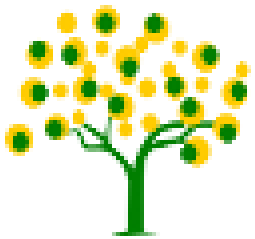
UFG

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

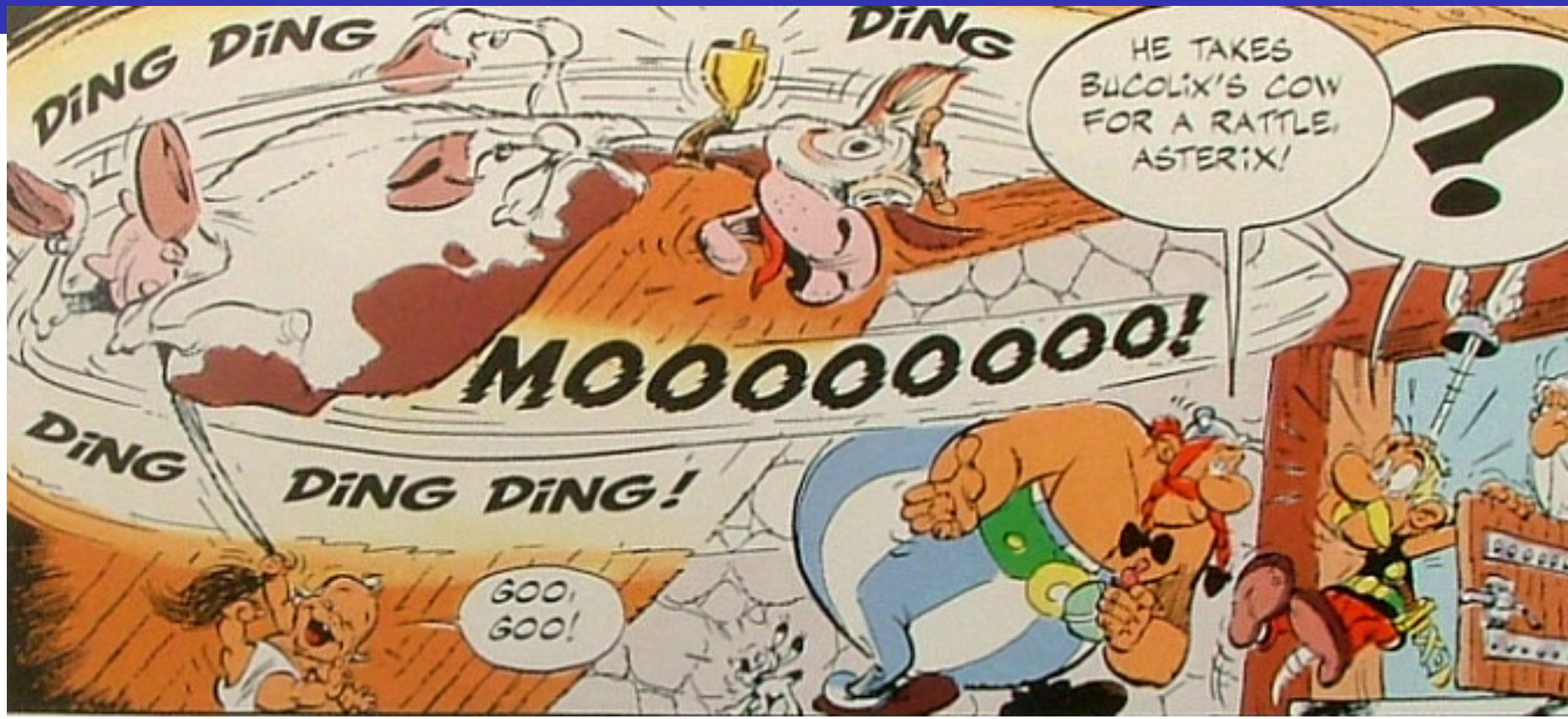
- Informática - Universal ⇒ Responsa
  Interdisciplinaridade
- Software Livre ⇒ Pensamento Livre ⇒ Sociedade Livre
- ASL-GO - PSL-GO
  SLOG - Anapolivre - GULOGO
- Flisol
- FGSL: 10-11/12/2010, GYN
- Join!
- Curious - Critical: Why?
- Please always enjoy!
- Question Your Dogmas... Be Free



Associação Software Livre de Goiás
ASL-GO

UFG

Thanks



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