Appendix J

Image and Art Gallery

The images in this gallery are somehow related to topics discussed in the main text – *Cognitive Constructivism and the Epistemic Significance of Sharp Statistical Hypotheses*. These images are provided with no fixed or definite interpretation, and are only meant as a stimulus to imagination and creativity[1]. Paraphrasing an aphorism of Fernando Pessoa:
– *There is no good science that is vague, nor good art or poetry that is not.*
Alternatively, paraphasing Fernando Gomide's interpretation of Luiz de Camões:
– *Good navigation is precise, good life is not precise.*

Figure JA.1: Wire Walking.
The most important thing is not to fear at all.

Figure JA.2: Ludwig Boltzmann, Cartoon by K.Przibram.
Moving ahead, no matter what.

Figure JA.3: Albert Einstein in his Bicycle.
Following the gentle curvature of the garden's geometry.

Figure JA.4: Niels Bohr in his Bicycle.
Complementary pedals must be pushed one at a time.

Figure JA.5: Empirical Science: All at Once!
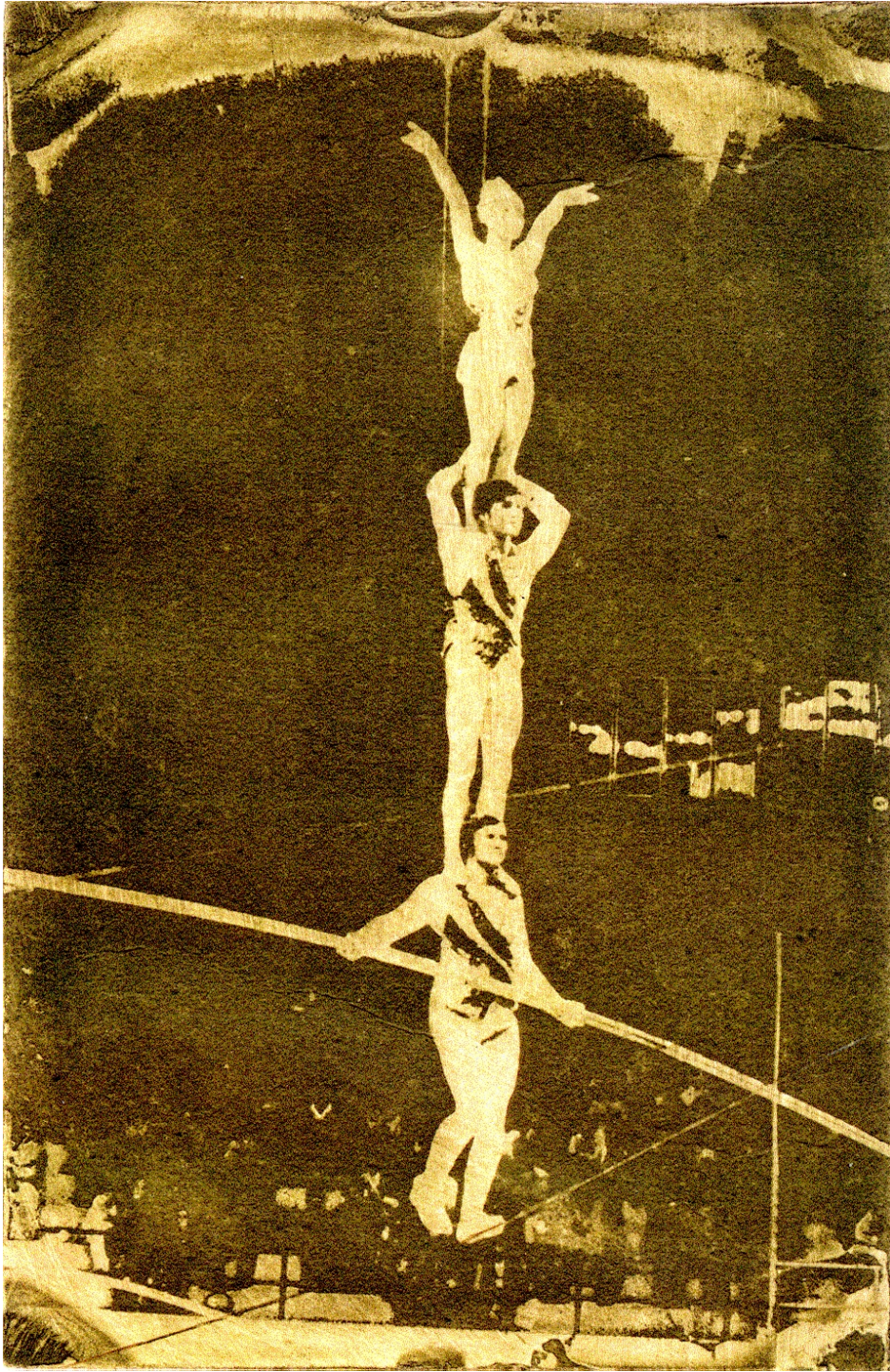Caution: Do this only at a fully equipped laboratory.

Figure JA.6: Triadic (or Semiotic) Wire Walking.
Etching by Alex Flemming (untitled, 1979, PA III/X),
based on a photo of the Moscow Circus at São Paulo.
Private collection of Marisa Bassi Stern.

Additional Contributions to the Art Gallery

Figure JB.1: Coffee a la MODE.
Vibration Eigen-Solutions on a Liquid Surface.
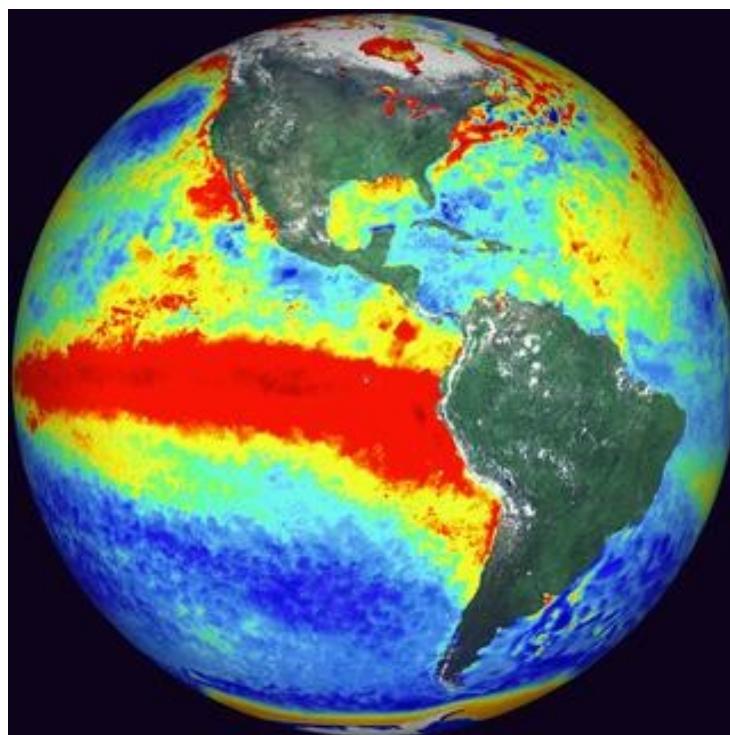Published at The Science Creative Quarterly, Sept. 2006.

Figure JB.2: Planet a la MODE.
Sea Surface Temperature at the 1988 El Niño Event.
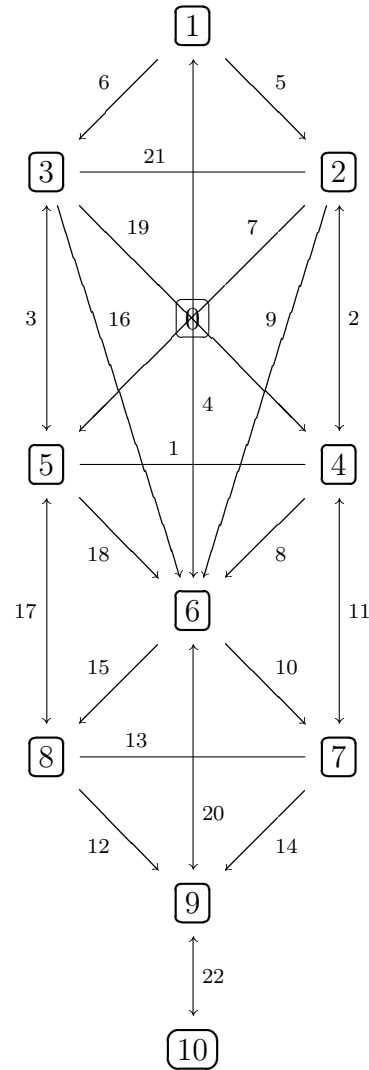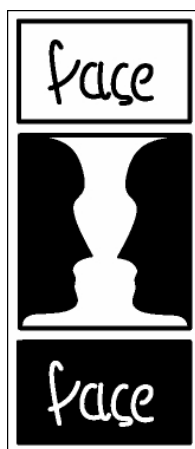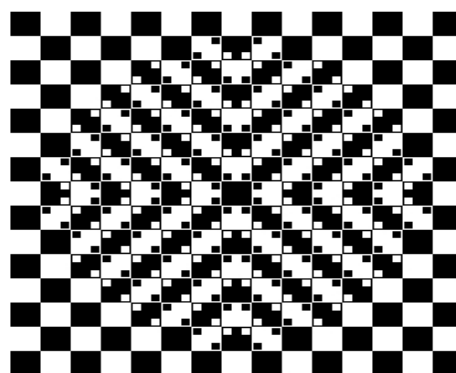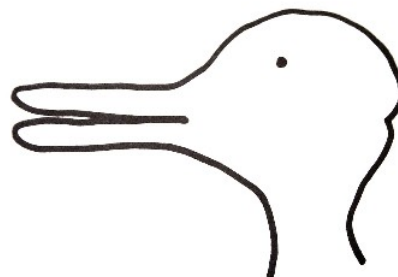NASA - Scientific Visualization Studio.

Figure JB.3: The Tree of Life, by Isaac Luria.
A lattice diagram of 11 key concepts and 22 inter-connections.

Free Allegoric Interpretation:
1- Systemic Evolution, 2- Symmetry, 3- Quantization, 0- Language,
4- Precision, 5- Stability, 6- Eigen-Solution, 7- Composition,
8- Separation, 9- Recombination, 10- Individual Organism.

X   •

Figures JB.4: Ambigrams, Optical Illusions, and all that,
Including the Duck-Rabbit, by Jastrow and Wittgenstein,
an Inkblot of the Rorschach Personality Test,
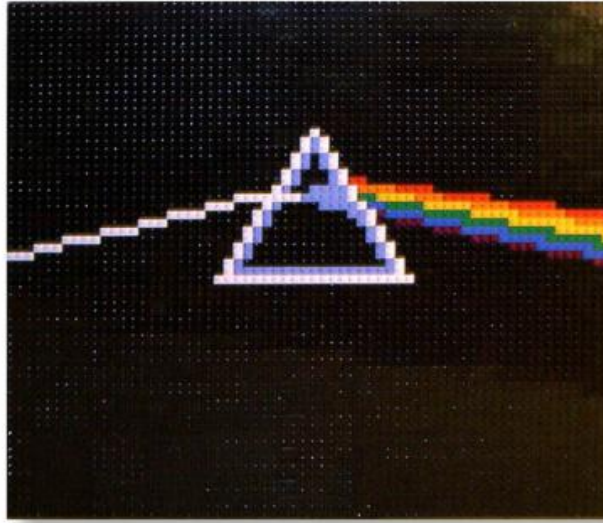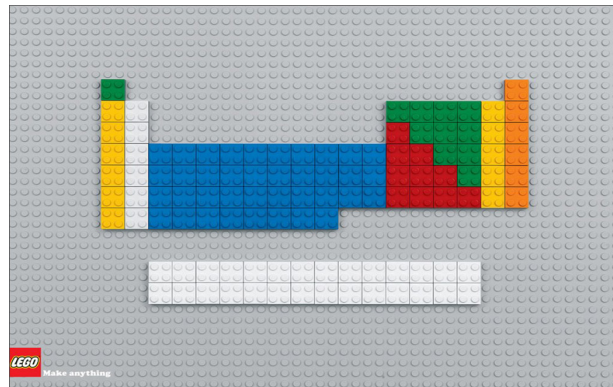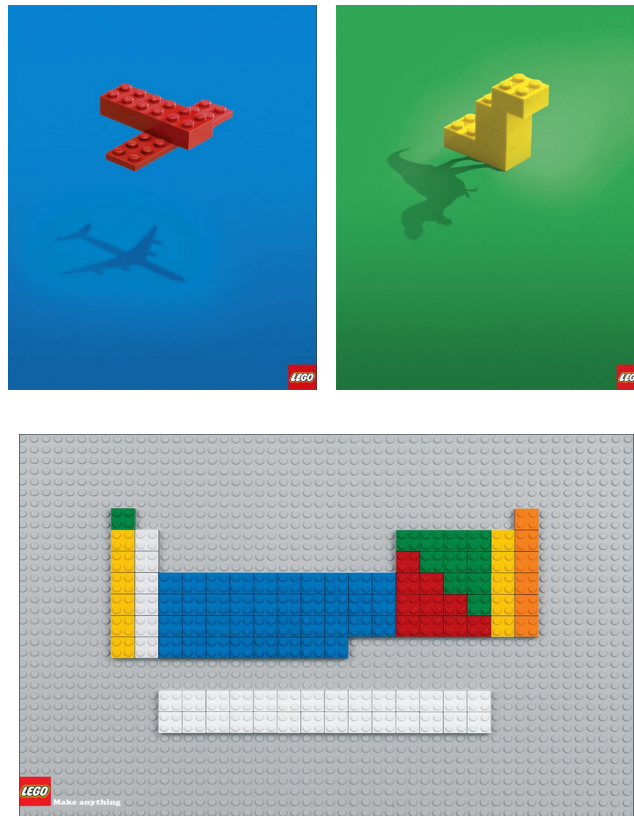and von Foerster's Blind Spot Finder.

Figure JB.5: A Spectrum from LeGogh.com Gallery.
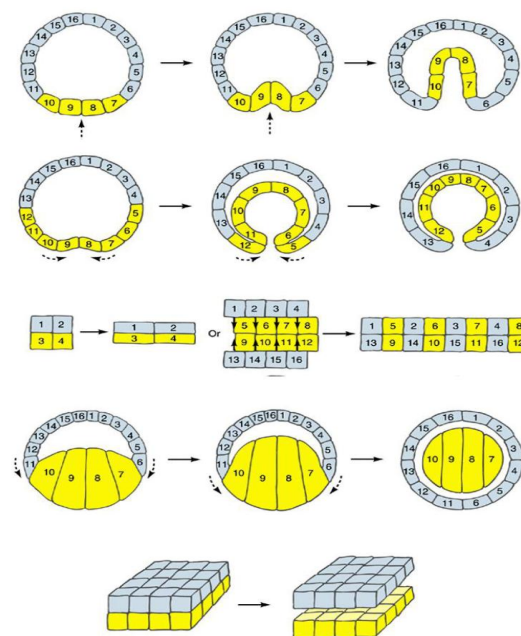

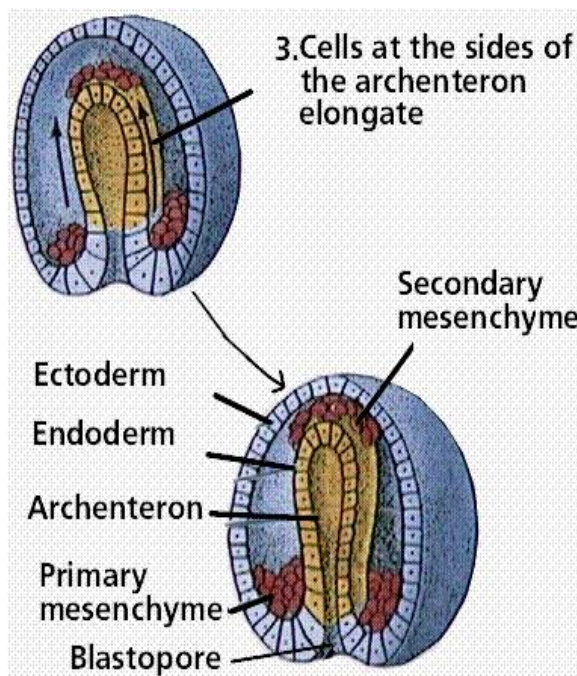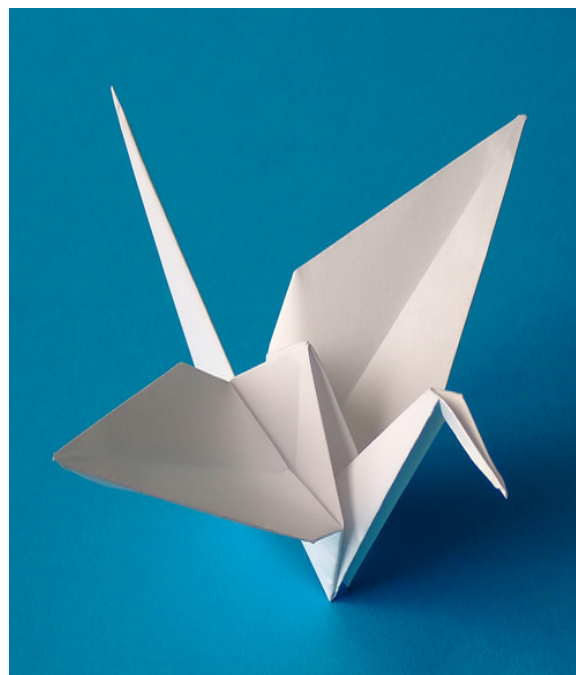Figure JB.6: Lego Ads by FCB Johannesburg.
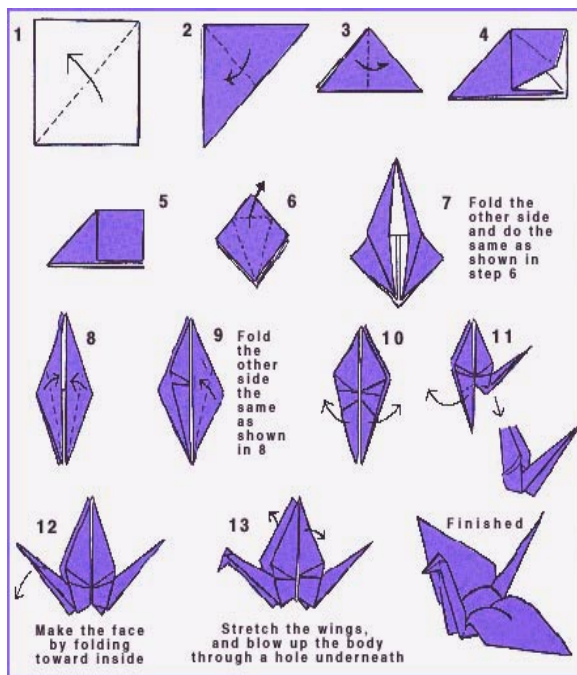
Figure JB.7: Foldings. A,B: Origami crane. Organic morphogenesis. C: Gastrulation; D: Tissue movements: Invagination, involution, convergent extension, epiboly, delamination.
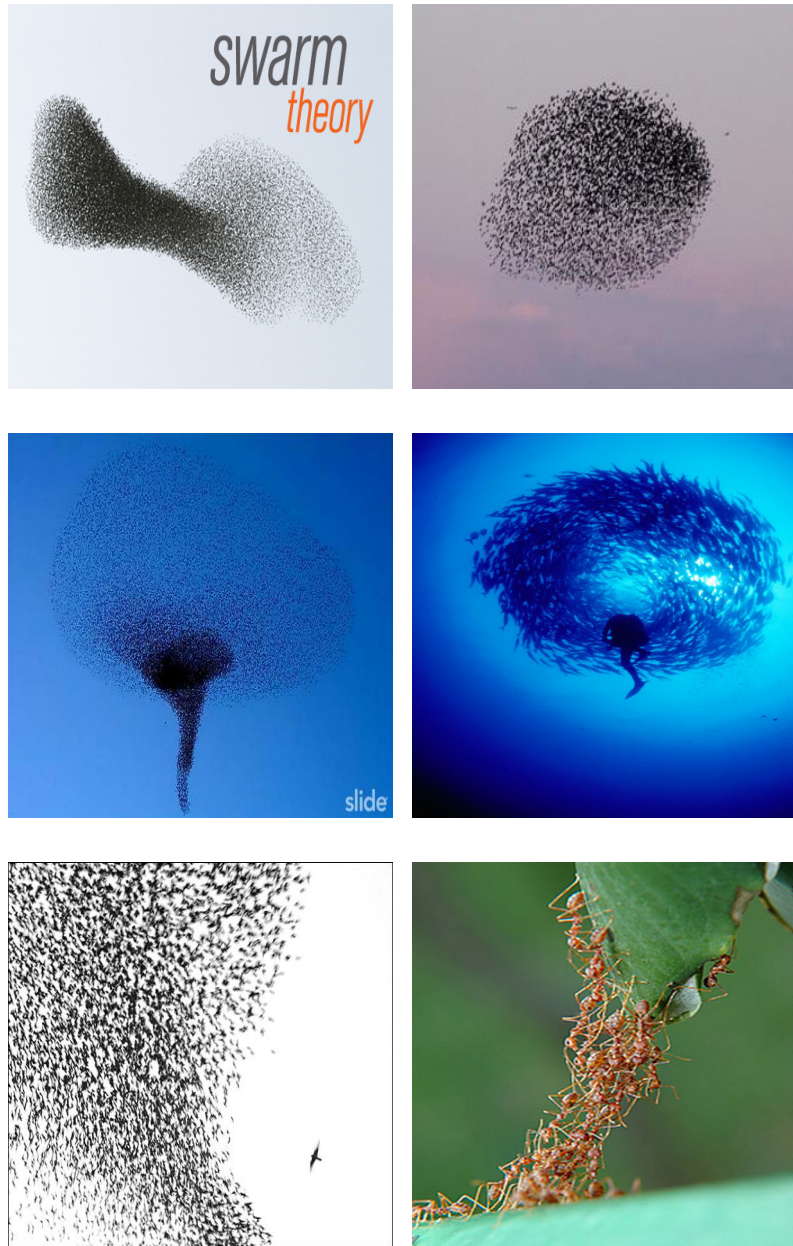
Figure JB.8: Flocks, Schools and Swarms.
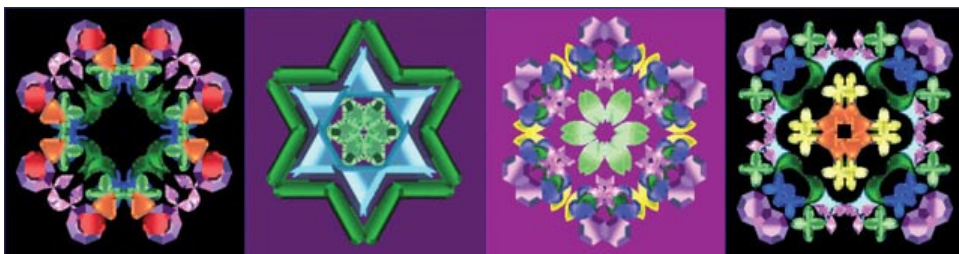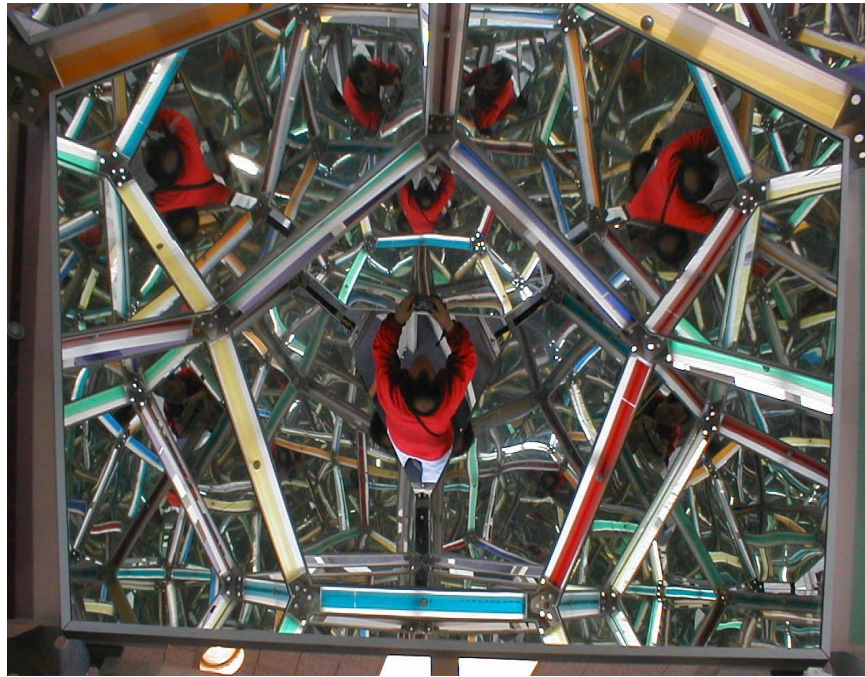
Figure JB.9: Kaleidoscopes and Mirror Houses.
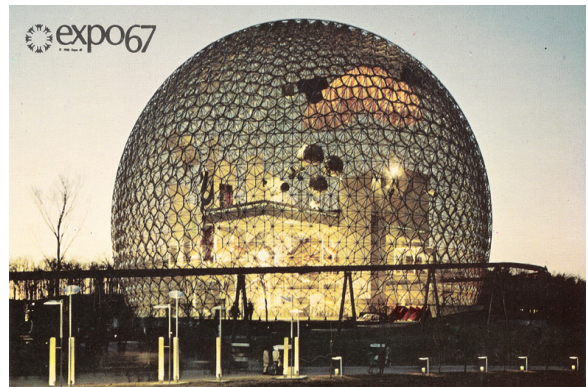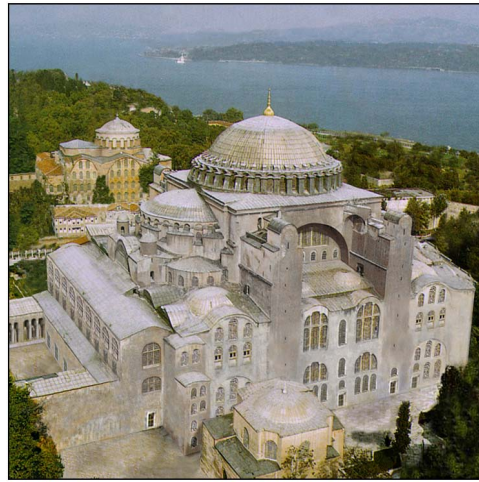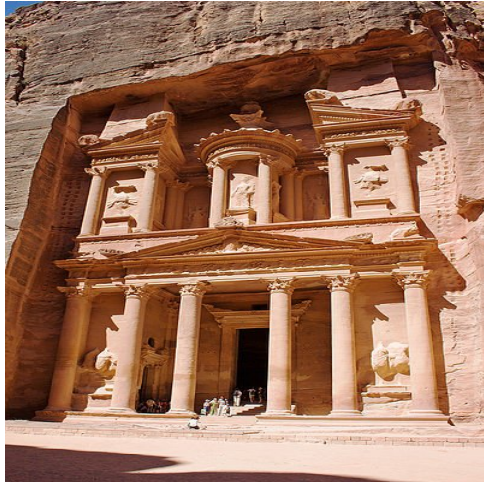
Figures JB.10: Architectural masterpieces.
Petra and Elephanta: Carved in solid rock.
Giza and Hagia-Sophia: Stone building blocks.
expo67: New tensile constructive elements.

Figure JB.11: Main sculpture at the temple of Elephanta.
The mask of eternity, in space and time; The mask of existence,
as wave and particles; The mask of ethics, between good and evil;
The mask of evolution, continuous but modular, from chaos to cosmos.

Figure JB.12: Avalokitesvara by Alex Gray.
Making and overcomming conceptual distinctions.

Cartoons
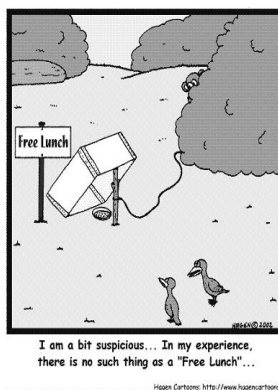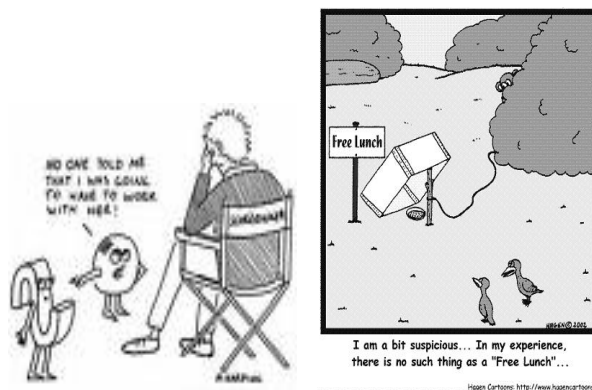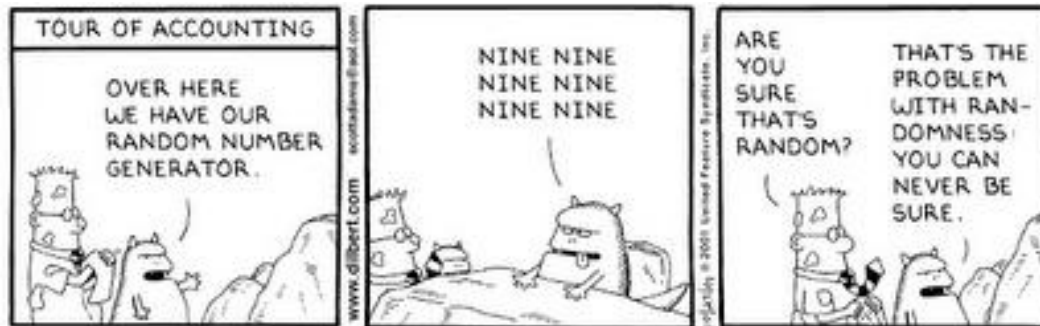
Figure JB.13: Probabilistic Cartoons.
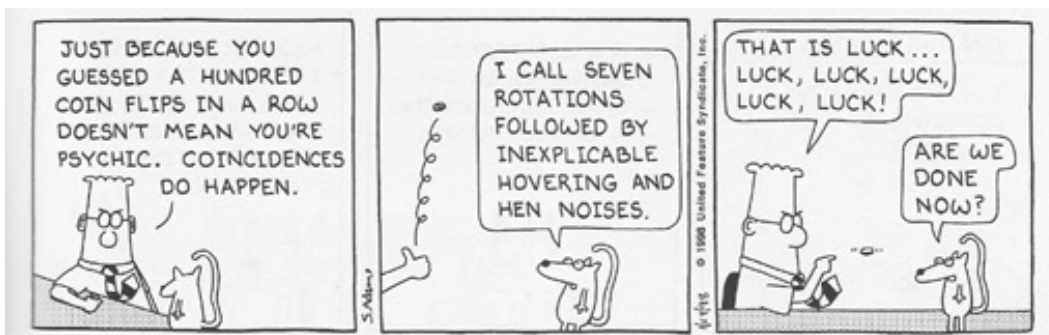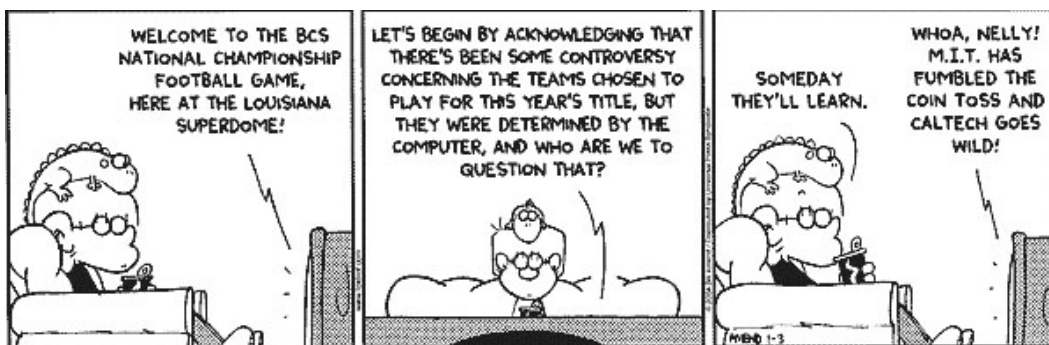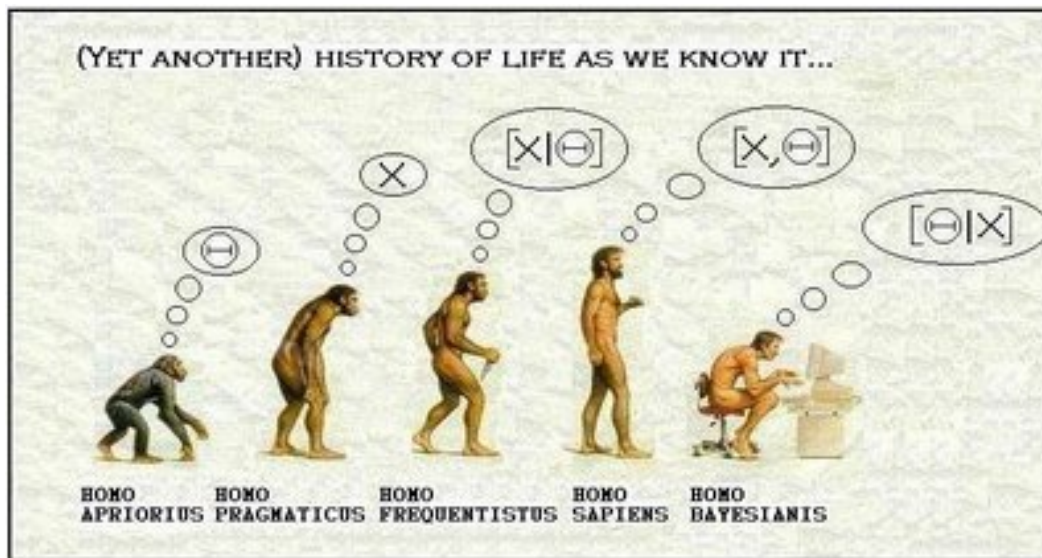
Figure JB.14: Statistical Cartoons.

HOW TO GAMBLE IF YOU MUST

INEQUALITIES FOR STOCHASTIC PROCESSES

INEQUALITIES FOR STOCHASTIC PROCESSES

(HOW TO GAMBLE IF YOU MUST)
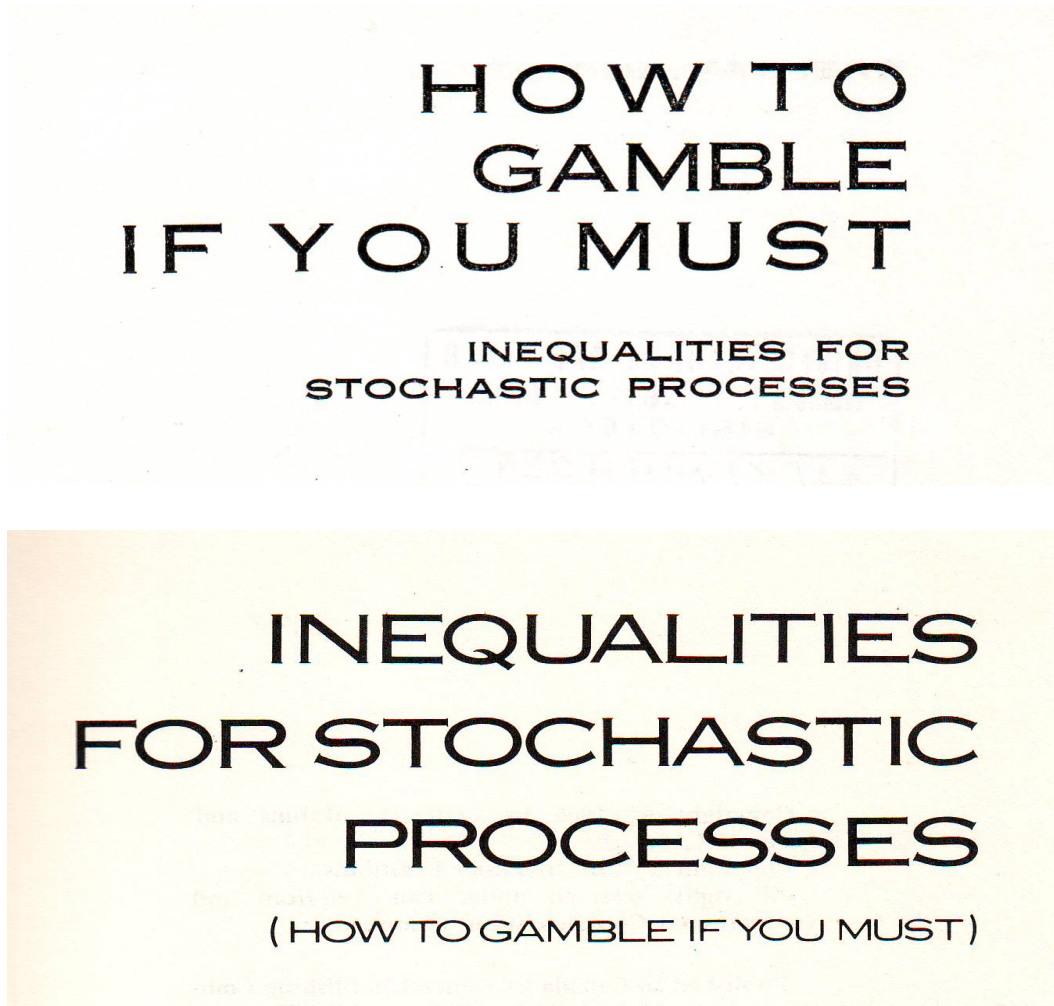
Figure JB.15: Covers of Dubins and Savage book, 1965, 1976.

"In order to alleviate the present publisher's concerns about possible mis-understandings as to the nature of the book, its title and subtitle have been permuted for this edition." (p.v).
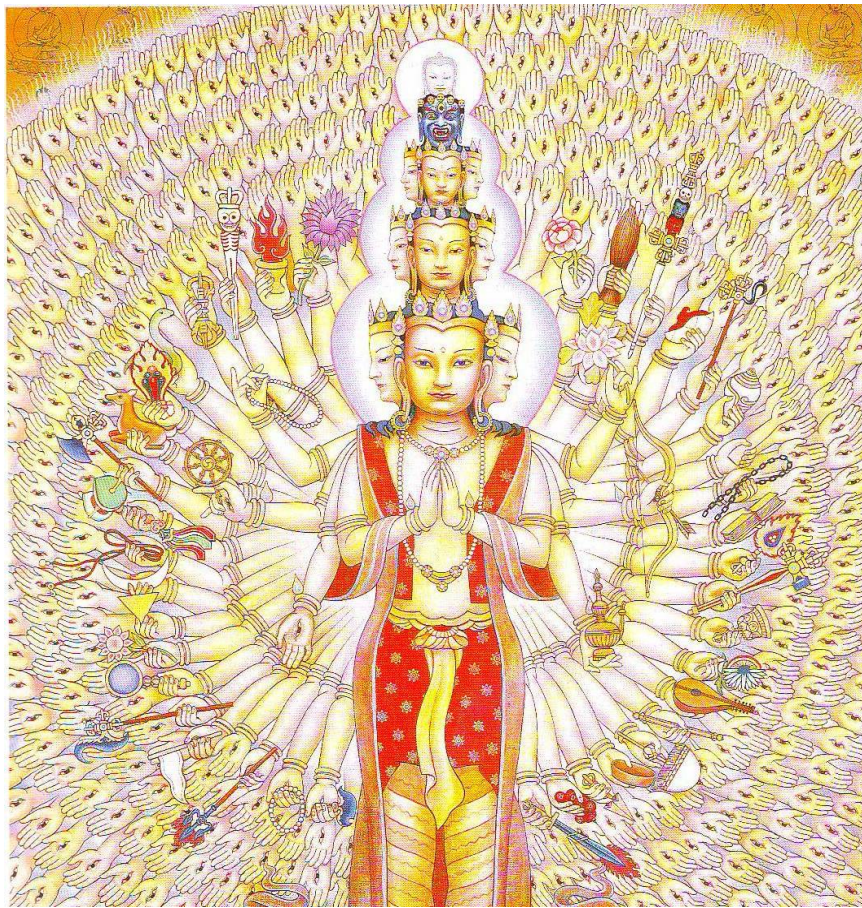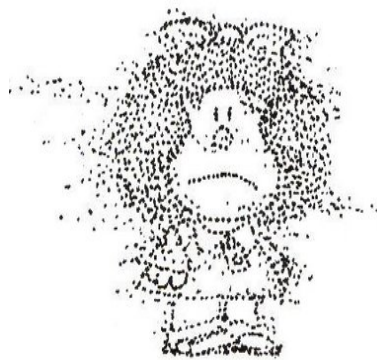
"Gambling problems in which the distributions of various quantities are prominent in the description of the gambler's fortune seem to embrace the whole of theoretical statistics according to one view (which might be called the decision-theoretic Bayesian view) of the subject...

From the point of view of decision-theoretic statistics, the gambler in this problem is a person who must ultimately act in one of two ways (the two guesses), one of which would be appropriate under one hypothesis and the other under its negation." (sec.12.8, p.229,230).
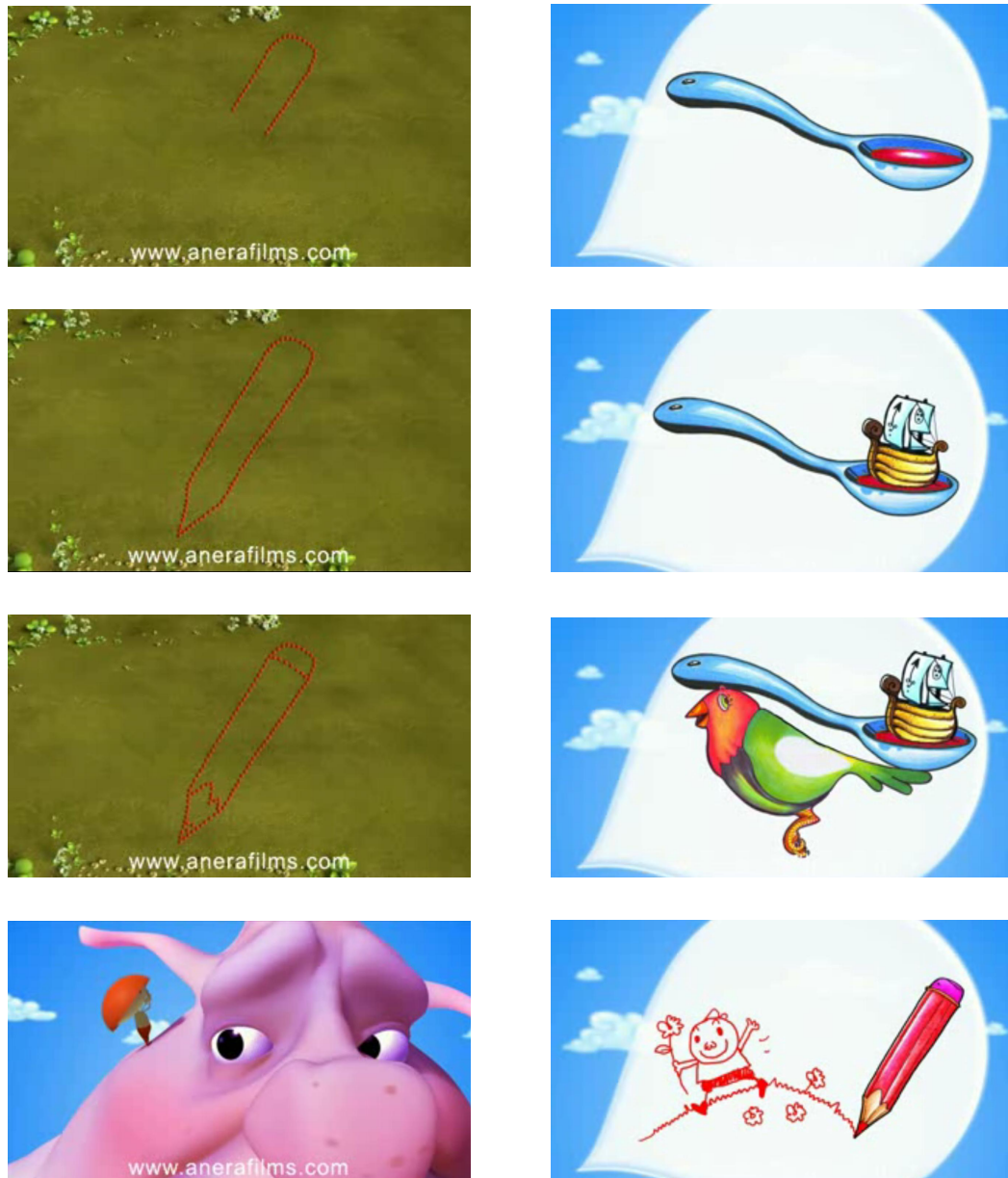
Figure JB.16: Boom and Reds, a cartoon by Anera films, features a friendly purple ogre, Boom, who, in every episode, will try to find out what a big crowd of peppy little mushroom-headed creatures, the Reds, are drawing in the floor. Boom gets stuck with fixed idea that he desperately tries to use to make sense of the drawing, for the great amusement of the Reds (and the viewers alike). Finally, with some hints offered by a merciful Red, Boom is able to correctly "see" (with his mind's eye) what is going on.
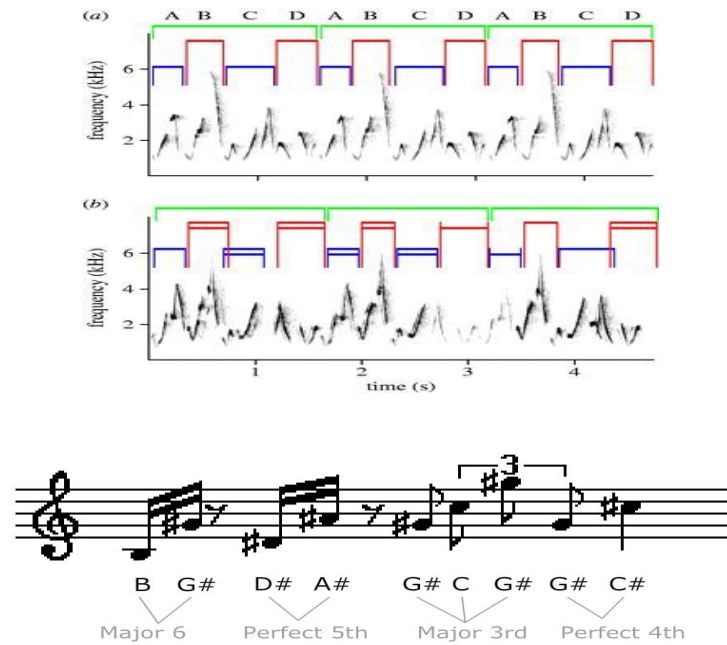
Figure JB.17: Speciation is an evolutionary process in which sharp, stable, separable and composable biological eigen-solutions may emerge in the form of musical or visual patterns. For example, "hear" the harmonic duet of the Neotropic Wren (Thryothorus euophrys) from the sonogram in Mann et al. (2006) or from the musical score at LosDoggies (2010); or see the beautiful plumage of the Scarlet Tanager (Ramphocelus bresilius) in paintings by Rockne Knuth and John James Audubon. The Tiê Sangue is in Brazil a symbol of freedom, since the vivid colors that a healthy bird displays in the wild quickly fade away when it is held in captivity.

Figure JB.18: The Moebius band in Technology and Art, including R.Davis' noninductive and nonreactive resistor, the 'all-seeing' Ouroboros in the Greek manuscript Chrysopoeia of Cleopatra (circa 100 AD), A.M.Hoover's Möbius Gear, Brazilian postal stamp showing IMPA's symbol, M.C.Escher's Möbius Strip II woodcut, J.Leys' animation of J.S.Bach's Musikalisches Opfers Krebskanon, and G.Anderson's universal recycling symbol.

Figure JB.19: Hybrid / Amphibious Vehicles.

The Rosetta stone (196 BC) is a hybrid vehicle that provides synchronic and diachronic ontological alignments. The texts at the stela are written, from top to bottom, in ancient Egyptian hieroglyphs and translated to Demotic script and ancient Greek.

Gas-electric hybrid cars are an engineering nightmare, requiring a thorough understanding of all the details of each of the individual systems plus the necessary coupling mechanisms. However, they may be the only way to achieve a sustainable future. Notice that the last logo is ill-conceived, wrapping a non-orientable möbius bad around a orientable sphere. Amphibious car by Aythya employing an ingenious adaptable tire / paddle-weel.

Figure JB.20: Famous ships with hybrid propulsion systems.

Argo ($\alpha\rho\gamma\omega\varsigma$, bright, swift): A ship planned or constructed with the help of Pallas Athena on which Jason ($\iota\alpha\sigma\theta\alpha\iota$, cure, heal) or Diomedes ($\delta\iota o$, god; $\mu\eta\delta o\varsigma$, cousel) sailed to retrieve his beloved Medeia and their sons Pheres ($\phi\epsilon\rho\omega$, bring, bear, endure, suffer) and Mermeros ($\mu\epsilon\rho\iota\mu\nu\alpha$, care, thought, anxiety). Medeia was a powerful sorcerer, daughter of Aietes ($\alpha\iota\epsilon\tau o\varsigma$, eagle), son of Helios ($\eta\lambda\iota o\varsigma$, sun), and sister of Aegialeus ($\alpha\iota\gamma\iota\alpha\lambda o\varsigma$, sea-shore). Greek galleys used a combination of rows and sails.

The Leviathan or Great Eastern: Her 6MW (8Khp) steam engines drove side paddle-wheels 17m in diameter and a 7.3m four-bladed screw-propeller. Additionaly, she could use 5,400m2 of sails distributed on 6 masts. Converted into a cable-laying ship, in 1866 she helped to establish the first lasting transatlantic (telegraph) communication line.

Tokens for Economic Eigen-Values.

Figure JC.1: Economic token backed by another token (gold),
by two (gold or silver), or by no other token (fiat money).

Figure JC.2: Emergency Money (Notgeld),
from the private collection of Heinz Stern.
Weakly Objective Tokens used at WW-I / Hyperinflation Germany.
5M Legend: The most frightful of frights is man in his delusion,
from The Song of the Bell, by Friedrich Schiller, 1800.
Knowledge comes with responsibility!

Figures JC.3: Symmetry and Asymptotic Characterizations of Distributions.
The Standard Gaussian: Center of Symmetry and Orthogonality Relations
(Mean and Covariance Matrix) and Limit of Binomial. Poisson / Exponential:
Log-Linear Probabilities of Event Counts / Waiting Times.
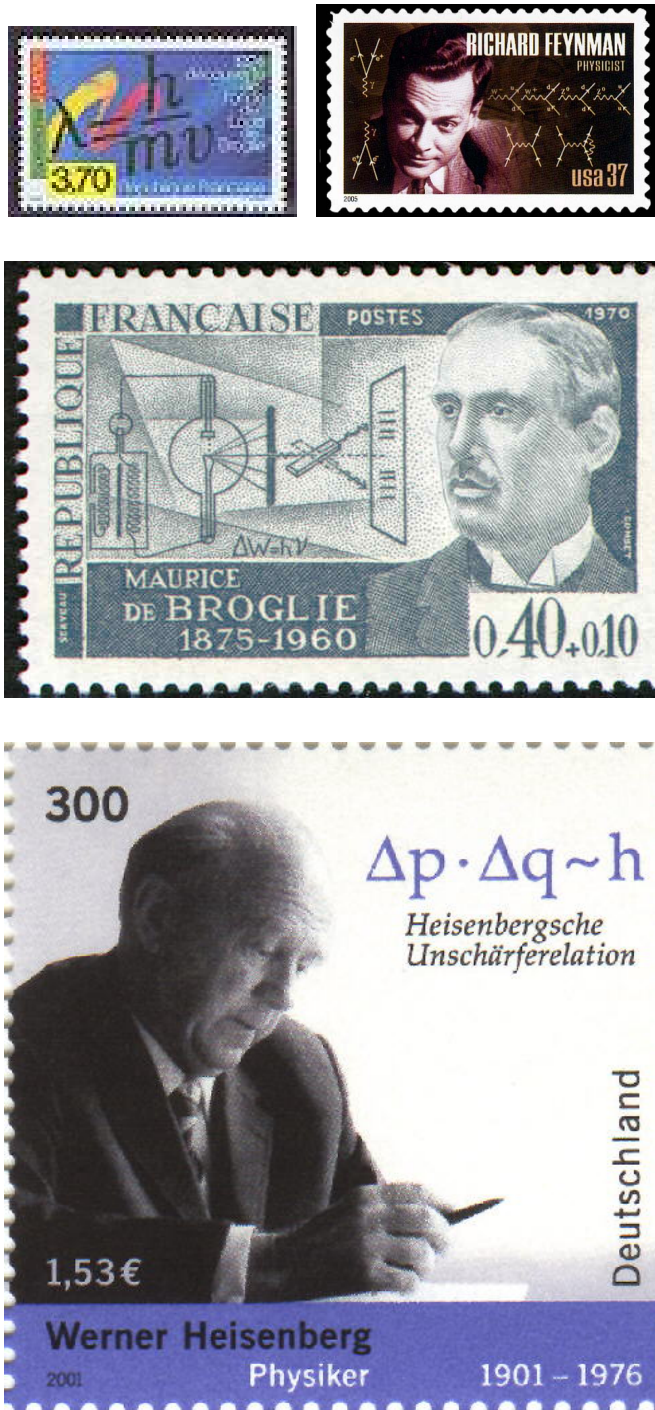
Figures JC.4: More Probabilistic Eigen-Solutions.

Figures JC.5: Atomic Orbitals, as Eigen-Solutions of
Bohr's Complementarity Model and Schrödinger's Wave Equation,
also the corresponding spectral lines, as observed by Fraunhofer.
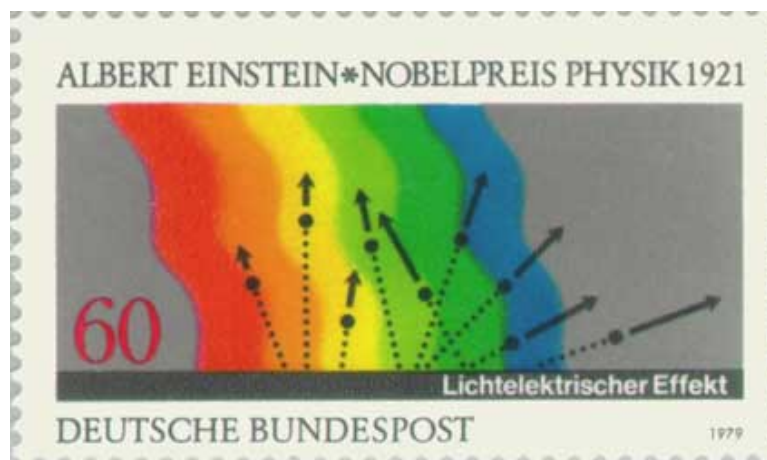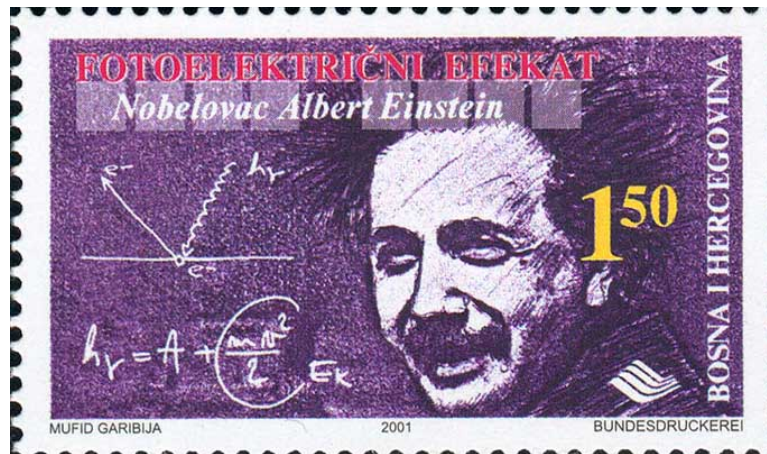
Figures JC.6: Einstein on Brownian Motion and Quantization.

Figure JC.7: Natural Modular Systems, in several scales.

Figure JC.8: The DNA Genetic Code.

Figure JC.9: Evolution, Continuous and Discrete Views.