Allen Fisher

Complexity Manifold:
The Falmouth synopsis:
draft notes and extensions.

1.
title page

2.
sub-title: **context**.

3.
C .A. Muses, idealised spatial representation for time and consciousness *ARK* 40, 1966, 'Divination, Higher Consciousness and Mathematics'

- in quantum spacetime there are resonances and not exact recurrences.
- Muses' orange threads are tangents to the black sphere developing a helicoidal (seven-angled) surface and a spiral periphery
- this work links directly to ideas of Pythagorean (Platonic) solids and the mathematics of Euclid, Fibonacci and Pacioli.
- Charles Arthur Muses (1919–2000) published *Chronotopology: Destiny and Control in Human Systems*
- Muses was an informal student of Norbert Wiener. Wiener published *The Human Use of Human Beings: Cybernetics and Society* in 1950.

4.
Plate 1 Figure 1, an Omega Minus (Ω^-) is produced in the British National 1.5m liquid hydrogen bubble chamber, photograph from C. Henderson (1970) *Cloud and Bubble Chambers,* London: Methuen & Co.

- Omega (Ω) containing neither up nor down quarks. The first Omega discovered was the Ω^-, made of three strange quarks, in 1964.
- The incident high energy K (koan)- meson is from a mass-separated beam of the CERN proton synchroton. It interacts with a proton of the chamber's liquid.
- scanners have considerable powers in seeing events against confusing background tracks.
- these events are rare occurring about once every hundred million centimetres of track.
- in liquid hydrogen the δ-rays (Delta-rays) lose energy almost entirely by ionization and form rather perfectly spiraling helices.
- δ-ray electrons are the name for any recoil particle caused by secondary ionization. The term was coined by J.J. Thomson.
- bubble chambers 'discovered' by D.A. Glaser in 1952, same year as CERN proton synchroton.
- J.S. Bell (1987) *Speakable and unspeakable in quantum mechanics,* Cambridge University Press, enhances understanding of this part of the discussion.

5.
Plate E, Nebulæ in the Pleiades, Robert S. Ball (1910) *The Story of the Heavens,* London, New York &c.: Cassell and Company.

- the unaided eye can sometimes see ten stars in the Pleiades group, a telescope will produce thirty or forty.
- Galileo saw forty through his first telescope. 625 stars were visible with a powered telescope in 1910.
- sometimes known as the Seven Sisters (Messier object 45), is an open star cluster containing middle-aged hot B-type stars located in the constellation of Taurus.
- one of the nearest star clusters to Earth.
- the cluster contains over 1,000 statistically confirmed members, excluding unresolved binary stars.
- the total mass contained in the cluster is estimated to be about 800 solar masses including many brown dwarfs (objects with less than about 8% of the Sun's mass, not heavy enough for nuclear fusion reactions to start in their cores and so not defined as stars).

6.

Fluorescent proteins visualise cancer in *vivo*. Robert M . Hoffman,
Lancet Oncol 2002; 3: 546–56.
http://www.metamouse.com/links/RMH-2002.Lancet%20Oncology.pdf
http://asia.stanford.edu/events/spring07/slides402S/okazaki.pdf

- a way of imaging metastases in mice by use of tumour cells expressing green fluorescent protein (GFP) that can be used to examine fresh tissue, both in situ and externally.
- real-time studies of tumour progression, metastasis, and drug–response evaluations.
- the GFP gene, cloned from bioluminescent organisms, has now also been introduced into a series of human and rodent cancer-cell lines in vitro, which stably express GFP after transplantation to rodents with metastatic cancer.
- Techniques were also developed for transduction of tumours by GFP in vivo. With this fluorescent tool, single cells from tumours and metastases can be imaged.
- GFP-expressing tumours of the colon, prostate, breast, brain, liver, lymph nodes, lung, pancreas, bone, and other organs have also been visualised externally by use of quantitative transcutaneous wholebody fluorescence imaging.
- GFP technology has also been used for real-time imaging and quantification of angiogenesis (development of new blood cells).

7.

Fig.23. in E.C. Zeeman, 'Differential equations for the heartbeat and nerve impulse', in C.H. Waddington (1972)(Ed.) *Towards a Theoretical Biology: 4: Essays,* Edinburgh: Edinburgh University Press. Republished with same figure number in E.C. Zeeman (1977, 1978) *Catastrophe Theory. Selected Papers 1972-1977,* Reading, Massachusetts: Addison-Wesley Publishing.

- the figure describes the electro-operation of nerve axons using mathematics and a visual metonym of local nerve impulse equations
- the voltage clamp technique was evolved by Kenneth Cole
- the technique isolates segment of axon, clamping voltage difference across membrane to various fixed values by means of electrodes inside and outside and measuring currents carried by flows of potassium conductance and sodium conductance of membrane

- cusp catastrophe illustrates this
- the sequence is (i) clamp switched on (ii) potential V jumps from '0 potential' to clamp potential V, thus displacing equilibrium E on V-axis to F (iii) then the fast equation goes to G on slow manifold (iv) and slow equations via å component carry the state to H where å = 0 perpendicular to clamp plane.
- the result of voltage clamp on sodium conductance is a fast increase along the path followed by slow decrease G to H, while the effect on potassium conductance is a delay F to G followed by a slow increase G to H.
- this correlates to the A.L. Hodgkin and A.F. Huxley descriptions of membrane current and their application to conduction and excitation in nerves.
- the idea of catastrophe theory's application to nerve impulses was suggested by Francis Crick and by A.L. Hodgkin's book *Nervous Impulse.*
- René Thom (1975) *Structural Stability and Morphogenesis,* Reading, Massachusetts: W.A. Benjamin, enhances understanding of this part of the discussion.

8.
sub-title: **æsthetics.**

9.
Patterns of connectedness:
using simulations from the inside of Polyomavirus at 25-Å (Ångström) resolution from James P. Griffith, Diana L. Griffith, Ivan Rayment, William T. Murakami & Donald L. D. Caspar (1992) 'Polyomavirus capsid and vision electron density maps computed by Fourier analysis', *Nature* 355, 6361, 1992.

- Polyomaviruses are a group of small, non-enveloped DNA viruses that can infect birds, rodents, and primates.

- See also: Elizabeth A. Hewat, Nuria Verdaguer, Ignacio Fita, Wendy Blakemore, Sharon Brookes, Andrew King, John Newman, Esteban Domingo, Mauricio G. Mateu and David I. Stuart (1997) 'Structure of the complex of a Fab fragment of a neutralizing antibody with foot-and-mouth disease virus: positioning of a highly mobile antigenic loop', *The EMBO* (European Molecular Biology Organization) *Journal*, 16, 1492-1500.

- Gregory Bateson (1979, 1980) *Mind and Nature, A Necessary Unity*, London: Fontana/Collins.

- Carl Schuster and Edmund Carpenter (1996) *Patterns that Connect, Social Symbolism in Ancient and Tribal Art,* New York: Harry N. Abrams.

- 'Patterns of connectedness', as part of an æsthetic theory, was articulated in Allen Fisher, *Necessary Business,* Spanner, London, 1985 (1992 rewritten). Rewritten version in *Topological Shovel,* The Gig, Ontario, 1999 (including the 'Thumbnail Lecture', 'The Mathematics of Rimbaud', and 'Topological Shovel').

10.
Blake, Carolyn (1997) Glacier at Maloja Pass, Upper Engadine, Switzerland.

- close to Friedrich Nietzsche's house at Lake Sils.

- I derived the conceit of *frenzy and self-control* from Nietzsche's archaic ideas in *The Birth of Tragedy* (1872).

11 and 12.
Two views of Spiral staircase, Loretto Chapel, Santa Fe, 1877.

13.
Karl Blossfeldt, *Common Chili-nettle capsules (Cajophora lateritia),* 1929, photogravure.

14.
Jacopo de' Barbari, *Fra Luca Pacioli and Student*, 1495, Museo & Gallerie di Capodimonte, Naples.

- In 1494 Pacioli issued the book, *The Sum of arithmetic's, geometry, doctrine about proportions and relations*. One of the book sections is a continuation of Fibonacci's *Liber abaci* (1202). In 1509 he published *De Divine Proportione.* dedicated to the 'golden section'. The book is illustrated by 60 figures probably factured by Leonardo da Vinci.

- Pacioli deduces 12 different properties of the golden section in relation to Plato's ideas of 'State', 'Laws', and 'Time'. He proposes that the given proportion is a universal relation expressing a perfection of beauty in nature and in art which he calls 'Divine Proportion' and is considers it to be 'instrument of thinking", an 'æsthetic canon', and the 'Main Principle of the Universe'.

15.

Hogarth, Self-Portrait with his Pug, 1745, London, Tate Britain.

- Hogarth's 'line of beauty' on his palette.
- Hogarth, *The Analysis of Beauty,* 1753.

16.
Egyptian Christian Coptic Manuscript, *Michael Slays Dragon*, 11th Century A.D, British Library.

17.
J.M.W. Turner, *Rain, Steam Speed – The Great Western Railway,* 1844, National Gallery, London.

18.
Edvard Münch, *The Scream*, 1895 Lithograph, Münch Museum, Oslo.

19.
Joe Rosenthal, 'Five marines and a sailor raise the US flag on Mount Suribach, WWII', photograph, 1945.

20.
Kenneth Martin, *Drawing 2 from Group VII*, 1969-72, *Chance and Order, Drawings by Kenneth Martin,* (1973) London: Waddington Galleries.

21.

Jasper Johns, *Weeping Women,* 1975, encaustic and collage on canvas, Private collection, New York. plate 168 in Crichton and different from that in Varnedoe.

- Michael Crichton (1977) *Jasper Johns,* New York: Harry N. Abrams. (The London exhibition was at the Hayward Gallery, June 21-July 30, 1978.
- Kirk Varnedoe (1996) *Jasper Johns. A Retrospective,* New York: The Museum of Modern Art.

22.
Allen Fisher, Fibonacci cylinder 1, 2002.

23.
Allen Fisher, Fibonacci cylinder 2, 2002.

24.
Allen Fisher, *Kessingland*, oil on canvas and hessian with *I Ching* sticks, 1978. Reproduced on www.allenfisher.co.uk

- *Kessingland Studies,* Spanner, London, 1979, included prints from studies for the painting with poetry from *As Fast As Possible.*

25.
J.S. Bach, Contrapuntus II from *Die Kunst der Fugue (The Art of Fugue), 1740s.*

26.
Allen Fisher, example Transcription from Bach's *Die Kunst der Fugue* for *The Art of Flight,* 1974.

27.
Allen Fisher, example Translation from transcription to text for *The Art of Flight,* 1974.

28.
Allen Fisher, example Typescript from translation for *The Art of Flight,* 1974.

29.
Allen Fisher, *Scattered Studies III, The Triumph of Pan*, from studies made for Clive Bush (2003) *Pictures after Poussin,* Hereford: Spanner.

30.
Nicolas Poussin, *The Triumph of Pan,* 1636, National Gallery, London (made for Cardinal Richelieu, Paris).

31.
Allen Fisher, photograph, *Gin trap,* 2010.

32.
Paige Mitchell, photograph of museum show case with Allen Fisher's *Trap studies* and museum's collection of traps, Hereford Museum and Art Gallery, 1993. Reproduced from www.allenfisher.co.uk

- selections from *Traps or Tools and Damage* were published in a booklet by Roehampton University, as part of Allen Fisher's inaugural professorial lecture in 2002. Partially available on www.allenfisher.co.uk → gallery → Traps.

33.
Allen Fisher, *Rodent trap 1-2,* watercolor and oil crayon*,* 2008.

34.
Allen Fisher, *Eclipse trap,* oil on canvas, 2007.

35.
Allen Fisher, *Hinge trap*, watercolor and oil crayon*,* 2008*.*

36.
Allen Fisher, *L*ove *trap,* watercolour, 1997.