CONSCIOUSNESS REFRAMED 9 – VIENNA 2008
`NEW REALITIES – BEING SYNCRETIC'

REDUCTIONISM REFRAMED
Nicholas Tresilian

ABSTRACT

Recognition of syncretic meaning as a strategic basis for human communication has been progressively curtailed by the irresistible rise of an alternative model of communication in the Western world, based on rational analysis and epitomised by science. In the scientific model – given rigorous form by Shannon's mathematical theory – communication is seen as a distribution of meaning from a sender to a receiver, and meaning itself is seen as distributable information: a perfect `signal', stripped of antithetical `noise'. Syncretic communication, on the other hand, binds rather than distributes meaning, combines `signal' and `noise' in the same message (q.v. primitive painting and sculpture – but also consider to-day's mass media) and its semantic quantum is an attractor rather than a vector. For none of this do we have any formally agreed frame of understanding. As a consequence the arts, which normatively prioritise syncretic meaning, have become subject to descriptive hyper-inflation: particularly the visual arts, progressively deconstructed by the Modern movement. The paper offers a first sketch for an information-theoretic approach to Western art-history which mediates Shannon by way of Prigogine to provide a basic mathematical model for syncretic meaning, using this model then as a source of concise explanations for: a) where Western Renaissance art came to differ from the primitive; b) how Modern art came to differ from the Renaissance model. It ends with a brief look at the creative potentials latent in 21st century post-Modernist art.

Key-words: Information-Theoretic Shannon Prigogine Attractor Syncretic

---

Visitors to an art-gallery cruise from artwork to artwork like bees in a herbaceous border cruising from flower to flower. But the `fix' of honey and pollen which is the bees' reward represent important commodities in the economy of the bee. The `fix' of intelligent pleasure that rewards the gallery-goer has no equivalent place in the human economy – the artworks themselves have an objective price, but not the subjective `fix' they deliver – indeed there is no agreed model for aesthetic communication in any formal sense in contemporary Western culture. The mainstream model of communication, as formalised by Claude Shannon in *The Mathematical Theory of Communication* (1949) is concerned exclusively with the distribution of clean feeds of `noiseless' information from a sender to a receiver, as in lists, inventories, legal codes, balance sheets and scientific formulae – instruments of rational communication.. Artworks on the other hand are inherently `noisy': they mix positives and negatives in syncretisms impermeable to rational analysis ; they bind their meaning in the very materials of which they are physically composed, inviting the observer to bond relationally with them to obtain the required subjective `fix'; in semantic terms they are *attractors,* sources of cultural gravitation, bending attention towards themselves.

For all that we lack any formal definition for relational communication, it is all around us in the modern world, not just in the arts but throughout contemporary mass culture: brands, ads, sponsors and the products they promote are attractors; stars, celebrities, life-style gurus, religious and political leaders are attractors; blockbuster films, tv news and entertainment programmes are attractors; our families, our personal friends, our private beliefs and superstitions, our talismanic private possessions are all attractors. Syncretic meaning may well be thought of as the `dark matter' of our semantic universe, a countervailing binding force to the splitting effects of science, massive in the cultural account, yet largely invisible to science itself.

We can however start to remedy this `syncretic deficit' if we go with the flow of information theory and in the process travel with it rather further than Shannon himself was interested in travelling. Shannon's great achievement, it will be recalled, was to formulate a value for information H of the form

$$H = - \Sigma\, p \log p$$

where positive values of H are associated the probability *p* of the outcome of a message, and its negative values therefore measure a receiver's initial *uncertainty* about its outcome and thence the amount of actual *information* it communicates.

Terms of the form `$- \Sigma\, p \log p$' first appeared in science in relation to the *entropy* of a thermodynamic process – e.g. the amount of energy a heat-engine wastes (in effect due to `molecular friction') when performing mechanical work. In identifying information with entropy - a negative value - Shannon seems implicitly to have recognised that the work of communication to produce a distributable `signal' would entail some inevitable simultaneous production of semantic disorder, which he called `noise' and which could be measured in positive values of entropy. `Signal' and `noise' were thus implicitly defined as complementary conjugates, such that the more you had of the one the less you could have of the other, and vice versa. Thereafter Shannon himself was principally interested in showing how by a correct matching of the input information H to the carrying capacity of the communications channel C it was possible to maximise the `signal' and minimise the 'noise' in any particular message – the goal of communications engineers the world over ever since.

Thus far, information theory seems wholly to support the cultural hegemony of rational communication. But if we accept Shannon's fundamental assumption of the continuity of culture with nature in thermodynamic terms, then it is reasonable to look elsewhere in thermo-dynamics for a possible match with the characteristics of a relational attractor. Let us take the most basic model of attractor conceivable: say, a child's well-used rag doll. It has simultaneous properties of `signal' and `noise' (it has the shape of a human being, but its individuality is usually crushed out of all recognition). It delivers its `fix' of affective arousal in response to a bonding relationship (the hugging and lugging about which progressively distort its shape). It is available as an adaptive resource for wide variations of the child's mood and behaviour.

There is a well-known equation by Prigogine (1955/67, pp 83-84) which subtly delivers all these properties at once. It describes the behaviour of a self-regulating system in an unstable environment. It assigns values of d_iS and d_eS

respectively to the internal and external and entropy flows of the system. According to the Second Principle of Themodyamics ('the entropy of a closed system must increase') the system's internal entropy-flow d_iS must always be positive. But if the system, as well as having an inside, is permeable to the outside (i.e. if it is an *open* system) it may import negative entropy d_eS into its interior to balance out the positive entropy flows resulting from its own closed processes. If the entropy flows are equal in amount but opposite in sign, that is to say

$$\text{if } d_iS = - d_eS$$

then the total entropy-flow of the system dS will balance out to zero

$$dS = d_iS + (- d_eS) = d_iS - d_eS \rightarrow 0$$

In those circumstances, says Prigogine, the system will behave homeostatically for small fluctuations in its environment, spontaneously returning to equilibrium when displaced – in short behaving as an attractor. .

Here then, in the Prigogine attractor, we have all the necessary rag-doll ingredients: the juxtaposition of positive and negative entropy (`signal' and `noise'); the merging of interior and exterior in an attracting entity; the functionality of the attractor across a range of varying circumstances. What we perhaps have to take for granted in the rag doll, but which seems fundamental to works of art, is the factor of systemic equilibrium: the balancing out of opposites within the image which is the basis of syncretic self-sufficiency – the capacity of an image or ritual to hold attention captive entirely within its own affective boundaries and to exhaust the mind's natural tendency to move on.

It is a comparatively short step, semantically speaking, from our emblematic rag doll to the systematic juxtaposition of representational and chaotic elements which is the characteristic visual `signature' of primitive painting and sculpture – albeit that in the ancient paintings and sculptures which the West pays most attention to, we are really seeing primitive art *at one remove* – the ultimate attractor in ancient art residing in the ritualistic *behaviour* of the human participants, the liturgy which alone confers animation on the otherwise inanimate art-objects.

Altogether more improbable as the basis for a Prigogine attractor was the representational art of the Classical and Western Renaissance periods. How could an image apparently feeding an ideally noiseless `signal' to the contemplative eye function simultaneously as a split feed of `signal' and `noise'? How furthermore could those split feeds be brought into equilibrium to produce the relational `fix' essential to the full aesthetic experience? How did the Old Masters and their Classical predecessors somehow manage to embed a relational attractor in what was to all appearances a finely-wrought channel for rational communication?

The *Mathematical Theory* offers a possible explanation. Shannon's Theorem 11 (1949/69, p. 71) makes two propositions. Firstly, as briefly noted above, it says that by correct matching of the information H to the carrying capacity C of the communication channel, it should be possible to reduce the accompanying `noise' to a trivial amount ε. (Shannon's ε may here be thought of as the communications

equivalent of Planck's Constant: the irreducible minimum uncertainty which accompanies every semantic transaction). Secondly the theorem says that if the channel is *overloaded*, that is to say if the information to be transmitted is greater than the carrying capacity of the channel

$$H > C$$

then the amount by which the input signal H exceeds C, namely

$$H-C$$

will produce the equivalent amount of `noise' in the output of the channel. By a very simple arithmetic, if the input signal is 50% overloaded, that is to say when

$$H=1.5C$$

and therefore

$$H-C = 0.5\ C$$

- the channel output will be 50% `noise and 50% `signal' and thereby fulfills the basic condition for a Prigogine attractor. In short, from an information-theoretic viewpoint, Classical and Renaissance representational art seems to have required the artist to overload the brain's visual channel with information massively in excess of its natural carrying-capacity, till the production of `signal' and `noise' came spontaneously into equilibrium *at a subjective level.*

The extraordinary demands of this operation on the cognitive and indeed spiritual genius of the individual artist seem in themselves to account quite satisfactorily for many of the observable characteristics of Western art-history: why so many aspirants were called to high art and so few chosen, whence the entire history of Western art can be described essentially in terms of the works of a few score `usual suspects' from Giotto to Courbet; why the `line' of Western art history is itself so jagged, lurching from crisis to crisis, as each new route into relational spontaneity became in its turn saturated with probability and the subject of rational emulation; why therefore the great metropolitan Academies which taught and marketed art were plagued internally with problems of passing-off and the rationalization of the relational; and why the art-market was systemically riddled with faking. Yet from ca. 1350-1850 this profoundly improbable method of producing visual art triumphantly `worked'; its successive crises of renewal now the benchmarks of art history from the early Renaissance to late Romanticism, its famous names still admired around the world.

The culture shock to the Western system was all the more profound, therefore, when in the second half of the 19th century new generations of artists abandoned the gold standard of academic Idealism with its `timeless' (ie noiseless) 3-D space and began to explore the alternative aesthetic potentials of the `noisy' image – an image with a reduced informational signal – the driver of the `modernization' of Western art. Though Modernist art has since then long been accepted into the mainstream of Western culture – its influence on graphic and industrial design alone would be

impossible to deny – Western popular culture still harbours doubts about its ultimate legitimacy which the popular press remains quick to exploit. Yet it follows directly from Shannon's 11th theorem that if there can exist a range of diminishing values of input signals H(x) where x is diminishing to zero, there must also exist correlative values of cognitive channel capacity C(x) where x is also diminishing to zero, for which

$$H(x)_{x\to 0} = 1.5\ C(x)_{x\to 0}$$

and therefore a 50/50 `split feed' of signal and noise is still potentially available at each of these successively lower information-levels of the visual image. In other words when the artist reduces the informational loading of the image, a Prigogine attractor can st ill be formed subliminally, but the eye of the contemplative observer would need *conscious recalibration* to a lower cognitive capacity in order to locate the aesthetic `fix'. From this point of view most of the opprobrium hurled at the Modern movement over the decades may arguably be attributed to the frustration of lovers of Renaissance art, their eyes trained to rich aesthetic overloads, failing to recalibrate to new and successively poorer overloads, and therefore failing to obtain the expected `fix', as Idealism gave way to Impressionism, Impressionism to Abstraction, Abstraction to Minimalism and finally Minimalism to Concept art: the point in the trajectory of modernization at which the input signal H(x) diminishes to zero, and the observer C is no longer sure whether the attractor is there or not – the threshold first marked for posterity by Duchamp's *Fountain*.

Today it seems clear that Modernist art, far from being an egregious escape from aesthetic authenticity, itself both expanded aesthetic authenticity and at the same time represented one substantive manifestation amongst many of the much wider 20th century phenomenon of *reductionism*: the drive to deconstruct the world by treating complexity as `noise' and simplicity as `signal', the characteristic cultural signature of the Industrial Revolution. In a longer treatment, reductionism itself would seem to invite a Theorem 11-type explanation, as an effect of growing informational overload on the limited information-processing capacities of human consciousness. (Somewhere within that account may lie an answer to the question of why `the modern' was itself such a powerful cultural attractor, especially in totalitarian regimes).

If there is a qualifying bias for a *post*-Industrial culture it is surely today's emergent *post-reductionism*: in the current science of chaos/complexity; in the current move to contextualization of the attractor in the arts – particularly, again, in visual art. After centuries of dealing with cultural overload, art is now entering an age of sensory decompression in which the planetary biosphere is perhaps itself the fundamental attractor. If so, finding a sustainable balance of signal and noise in our relations with the planet may yet become a cultural priority and the arts – i.e. Prigogine attractors in as yet unforeseeable forms - may yet again come to play the central cultural role they seem so successfully to have played in ancient economies of the past: namely as mediators of a sustainable ecological consensus.

2500 wds

REFERENCES:

Prigogine, I (1955/67) *Introduction to the thermodynamics of irreversible process.* (New York, NY, Interscience).

Shannon, C.E. & Weaver, W. (1949/69) *The mathematical theory of communication.* (Chicago, IL, University of Illinois Press).