

Chapter 12. Futures

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"The Universe is an explosion extended over a hundred billion years that appears as a majestic solidification only to the eyes of a transient being like man".

(Lem: *Microworlds*)

"No species truly comes of age until mind is comprehended"

(Amoroso & Martin 1995).

12.1: The current historical situation

There is not one future but many, all contingent on the historical choices we make at the present. The function of psychohistory, as a consilient discipline fusing psychology (in the widest possible sense) and history (also in the widest possible sense) is not to 'predict' any single future but to develop *techniques of envisionment* (Nardi 2001) appropriate to the 21st century that broaden the range of historical choices available to us (Wallerstein 1998) and enable us to develop appropriate strategies for their realisation. Psychohistory, although claiming autonomy as a discipline, does not present a new social science paradigm intended to supercede all others, but advocates a transparadigmatic stance that integrates the insights of many fields in order to move beyond the constraints of species narcissism, to enter the 'vectored domain of emergent process' and engage directly in a more realistic analysis of the human condition. The main hypothesis upon which the entire metatheory presented in this study is constructed - i.e. that the psychohistory of a self-aware, technological species can be inferred from its evolutionary path, morphogenetic trajectories, reproductive strategies and childrearing modes - is falsifiable to the extent that so far we have only one such species to study - ourselves. Nevertheless, until conditions for such falsifiability present themselves our metatheory must rest, at least for the present, on the assumption that our current predicament is due largely to hysteresis effects between multiple evolutionary levels: the ahistoric, ever renewed process of generic and inflicted traumatisation, the inertial effects of primary and secondary epigenetic rules, the more rapid pull of cultural evolution and the acceleration of global history. The emergence of the latter two factors from the biological matrix of the planet is a very recent event, and both remain held firmly on a leash created by the previous two.

The seeds of the infrastructure we call world civilisation grew from the ancient agricultural city-state complexes that emerged in the great river deltas and floodplains of the Tigris-Euphrates (Sumer), the Nile (Egypt), the Indus Valley (Mohenjo Daro and Harappa), the Huang-ho and Yangtze (China). The series of early cultures that rose, flourished, dissolved or merged in and around these areas are the Generation I (Gen I) cultures. Their gradual accretion into larger and more complex units culminated in a series of large-scale empires during what Eisenstadt has called the 'Transcendental Age', an epoch lasting about 1200 years (c.600 BC - 650 AD) that saw the development and

elaboration of the major world religions. Catalysed by the monastic institutions that emerged at various points throughout the Eurasian ecumene at this time, these 'transcendent' religions spread during the dissolution of the ancient empires of the Gen I phase and became the 'chrysales' of the four oldest world 'metacultures' - Europe and the Mediterranean, the Middle East, India and the Far East (the Gen II cultures). Societies peripheral to these metacultural areas were either assimilated by them in the course of time or were unable, due to their later emergence, to develop a stable and independent civilisational base in their own right (e.g. the peripheral societies of the Eurasian Nomad basin, the Pre-Columbian civilisations of the Americas and the Sub-Saharan cultures of Africa). The temporal dynamics of planet-wide civilisational growth forced them into the orbit of the Gen II metacultures - victims of time and the gravitational pull of the more dominant and mature sociopolitical attractors. The process of 'globalisation' is the result of economic and cultural domination of the human ecumene by the Gen II scientific-technological culture of Europe and the continent it successfully absorbed - North America. This domination is a consequence of two epochs of expansion, one primarily colonial, following the axial conflict of the first Thirty Years War and the second technological-economic, following the final axial conflict of the second 'Thirty Years War' - World Wars I and II (see Fig. 12.9 below) - which effectively closed the cultural canon of the West.

Evolutionary constraints derive from human pre- and perinatal trauma, reproductive and childrearing strategies, sexual dimorphism, culture-enhanced gender differentiation, continual sexual arousal and neoteny-induced dependence. These are the core dimensions of human experience, all of which are bound together to form a single existential matrix forming the common template of all that is 'sacred' and 'occult' - home to the 'monsters of the Id'. Because of human neoteny, early unanalysed morphogenetic experiences imprint, permeate and influence a lifespan whose brief cycle perpetuates the transgenerational communication of perinatal and early childhood nightmares over time through the nexus of the family. We saw in ch. 8.6.3. that two 'polarities' of reproductive strategy are employed in biology - the *R-type* strategy which aims to produce as many offspring as possible in the hope that some may survive, and the *K-type* strategy, which aims to produce fewer offspring - which are maximally cared for and educated. Although humanity seems to have created a more favourable environment through advances in science and technology, it has done so at great cost to its own 'matrix of embodiment' - the 'non-human' environment - and although the evolution of human neoteny suggests a greater adaptive value for K-type strategies (which promote greater mental maturation and increased learning), R-type strategies tend to remerge in times of crisis, which multiply as complexity increases. When sociopolitical complexity passes the critical point determined by the psychological constraint catastrophe of a given culture, regressive childrearing modes prevail, creative élites are outbred, decay and fail, cultural transmission falters and the isolated gains of a previous epoch fracture and break down. Archaic EEA-derived psychology and the brevity of the life-span conspire to inhibit the maintenance of a highly complex scientific and technological culture without modes of social control that ultimately prove constraining and counteradaptive.

Globalisation marks the 'late imperial' phase of Euroamerican culture, which is currently facing a crisis of disintegration similar to yet on a far larger scale than, the empires of the past. At the dawn of the 21st century overpopulation, environmental destruction, acute resource depletion, increasing disparity of wealth and sociopolitical instabilities all propel the current historical system towards collapse and transition, while archaic evolutionary drives and the constant recapitulation of generic trauma on an ever widening scale exacerbate deep anxieties evoked by a subconscious realisation of the imminence of this transition. These anxieties, rooted in the perinatal matrix, drive us to intensify EEA-derived strategies more appropriate to earlier phases of our history while simultaneously denying the ultimate futility of these strategies in dealing with the challenges of the present. Supposedly 'rational' solutions prove less and less effective, bringing ever-diminishing marginal returns as depleted resources are desperately invested in higher but increasingly brittle levels of socioeconomic complexity (Tainter 1988). As Robert Heilbroner of the New School of Social Science has noted: "*We have become aware that rationality has its limits with regard to the engineering of social change, and that those limits are much narrower than we had thought... that growth does not bring about certain desired ends or arrest certain undesired trends*" (Heilbroner 1991 p.50). Yet wholesale abandonment of growth strategies may prove equally futile, as Heilbroner observes: "*...impassioned polemics against growth are exercises in futility today. Worse, they may even point in the wrong direction... In the backward areas, the acute misery that is the potential source of so much international disruption can be remedied only to the extent that rapid improvements are introduced, including ... health services, education, transportation, fertilizer production and the like*" (*ibid.* pp.159-60).

Redistribution and diffusion of new technologies, goods and expertise form part of the B-phase or downswing of every long-wave or Kondratyev cycle (Van Duijn 1983; Reijnders 1990; Tylecote 1992 - see below). However, the current rate of technological acceleration serves only to increasingly delimit and constrict the market area available for saturation, augmenting the disparities between core and periphery (Wallerstein 1998 pp.57-8). Heilbroner points out that "*...massive human deterioration in the backward areas can be avoided only by a redistribution of the world's output and energies on a scale immensely larger than anything that has hitherto been seriously contemplated...such an unprecedented international transfer seems impossible to imagine except under some kind of threat*" (*op.cit.* p.44). This threat is of a triple nature: a) environmental deterioration, b) climate change and c) base resource depletion (fossil fuels). The necessity of switching to another base resource (e.g. hydrogen, as advocated by Rifkin (2003)) runs into similar problems faced by past societies in crisis - the timely transformation of existing power structures. These power structures seek to entrench themselves further as acute resource depletion reactivates primal fears of perinatal impingement. As Wasdell writes: "*Obsessive, angst-driven struggle for resources is the order of the day. In the light of these dynamics, the norms, value-systems and processes of capitalism and the power-struggle of the free-market economy can be seen as the social construct of anxiety defence reified into a resource-related ideology... The impact of the paranoid swarm is to push the global system beyond the "positive sum" scenario of growth for all, beyond the "zero-sum" scenario in which inequitable resource-sharing drives the weakest to the wall, and into the "negative sum" scenario of potential*

catastrophic implosion" (Wasdell 1992 pp.5, 9). Heilbroner in turn foresees "...a climate of extreme 'goods hunger'" where "a large scale reorganisation of social shares would have to take place in the worst possible atmosphere, as each person sought to protect his/her place in a contracting economic world" (*op.cit.* p.104).

Such a situation precipitates feelings of panic and rage that derive from the second and third stages of the Basic Perinatal Matrix. Caught in the transition between pre- and postnatal inner worlds, elements of the 'paranoid swarm' regress to increasingly schizoid modes of behaviour, expressing these feelings through sexual promiscuity (symptom of a desperate, unfocussed desire to 'merge' within the womb - see ch. 7.4) or aggression - in an attempt either a) to be 'received' back into the womb ('paradise') via religious fundamentalism (Toynbee's 'archaism' (ch. 2)) or b) to force through the transition as quickly as possible so as to be 'reborn' (i.e. 'War as Birth' (deMause 1982 pp.93-99) - Toynbee's 'futurism'). Citing once more the introductory essay to the Freud Exhibition entitled *Conflict and Culture* held in 1999 at the Jewish Museum of New York, we are reminded that: "*although much has changed since Freud first formulated his theories, today's concern with the disruptive power of sexuality and aggression has only intensified. Freud did not propose solutions to how one might escape this violence. Instead, his writings on the connection of culture and conflict identified fundamental problems for the twentieth century - problems that show no sign of disappearing as we move into the twenty-first*" (see ch.4.1). Hence the increasing preoccupation with 'moral decay' as well as with global 'terrorism' (the onslaught of the supposed 'barbarians') in which WMD's may come to play an increasingly deadly role in an overpopulated world. Heilbroner states that "...two considerations give a new credibility to nuclear terrorism: nuclear weaponry for the first time makes such action possible, and 'wars of redistribution' may be the only way by which the poor nations can hope to remedy their condition" (*ibid.* p.45). The nuclear arsenal has now been augmented by biological and chemical weapons that are far easier for poorer groups to manufacture.

This triple threat to global stability produces: "...a challenge of equal magnitude for industrial socialism as for capitalism - the challenge of drastically curtailing, perhaps even dismantling, the mode of production that has been the most cherished achievement of both systems. Moreover, the mode of production must be abandoned in a mere flash of time as historical sequences are measured" (*ibid.* p.109). This is not to say that 'apocalypse', 'Armageddon' or 'total extinction' are inevitable or even likely. The 'end of the world' always appears as such to those on the cusp of historical transition, when all social constructions and collusive systems of defence face imminent dissolution. Nevertheless, some form of 'die-back' and infrastructural collapse would indeed seem to be unavoidable, entailing severe re-traumatisation of the survivors as well as the loss of key resources and knowledge. This re-traumatisation, plus the need to manage a greatly depleted resource base will exacerbate the effects of neoteny-induced dependence, propelling the survivors to embrace willingly any form of authoritarian structure that may seem to offer some sense of security. As Heilbroner observes: "...strong leaders provide a sense of psychological well-being that weak ones do not, so that in moments of crisis and strain demands arise for the exercise of strong-arm rule" (*ibid.* p.132), therefore "... the passage through the gauntlet ahead may be possible only under governments capable

of rallying obedience far more effectively than would be possible in a democratic setting" (*ibid.* p.134). Symptoms of imminent 'knowledge death' such as that which occurred towards the closure of the first Islamic cycle (Whyte 1980) are already evident both in the 'diminishing marginal returns' on investment in education at all levels in the core (Tainter 1988 pp.103-6) and in the increasing 'professionalisation' of research and academic teaching - i.e. their subordination to and containment by, resource-controlling power structures. This should not surprise us as we have seen (in ch.11.9.3) how a defensive obsession with control and structure acts as a substitution for mentation in large groups (de Maré 1975 p.155) and how restrictive paradigms are imposed as group totems at times of acute stress, indicating 'regression' in the sense of a retreat from the metacomplex towards more archaic, 'dichotomising' modes of thinking (Streufert & Satish 1997). Heilbroner invites us to "... suppose ... that only an authoritarian, or possible a revolutionary, régime will be capable of mounting the immense task of social reorganisation needed to escape catastrophe...might not the people of such a threatened society look upon the 'self-indulgence of unfettered intellectual expression...as of no concern, or even of actual disservice, to the vast majority?'" (*ibid.* p.24). But in proposing that "*in our discovery of "primitive" cultures, living out their timeless histories, we may have found the single most important object lesson for future man*" (*ibid.* p.167), Heilbroner echoes Norman O. Brown's prediction of the advent of a 'Millerite Culture' - the death of cities and machines, the breakdown of global society into small tribal groups, the loss of any sense of history, the decay of scientific knowledge and the re-emergence of 'all that is truly occult' (Brown, 1959 p.305) - a society in which "*the search for scientific knowledge, the delight in intellectual heresy, the freedom to order one's life as one pleases, are not likely to be easily contained ...*" (Heilbroner *op.cit.* p.166).

Brown's vision is predicated on the mass annealment of generic trauma - a 'resolution of the fourth discontinuity' through a reconciliation between pre- and post uterine experience. This presents us with the core challenge. If it is likely that human cultural achievement is the indirect product of generic traumatising, universal annealment of this traumatising on Brown's model could conceivably entail a retreat from higher cognitive functions, thereby diminishing human motivation and creativity (humanity's 'Catch-22' referred to in ch. 8.7) and reducing our perception of the flow of time to a more animal-like 'timeless present' (regarded by Brown as infinitely preferable to our current state). Brown does not explain how a generalised, universal annealment of this type would ever come about. The prevalent New Age dream of a 'great spiritual awakening' that lies just round the corner - i.e., if we all just 'have faith', focus, meditate and strive as individuals to live in an eco-conscious way, we will somehow suddenly wake up some Monday morning all 'loving each other' - is an unlikely prospect. But even if some more 'rational', large-scale programme were attempted, combining psychotherapeutically-based 'mass healing' with the educational and social praxis advocated by Freire (1990) in an attempt to 'raise the consciousness' of the 'human family', the most optimistic rates of annealment (e.g. following the 'cellular replication' model advanced by Waddell (1993)) would encounter problems of error propagation in transmission (App. 4) as well as inertia due to a) the far faster rates of birth and re-traumatising as well as the brevity of the lifespan - especially in the poorer areas of the planet, b) the rigid entrenchment and defensiveness of existing social systems and power

structures, c) psychogenic and cultural barriers to the theoretical base and implementation of any such programme and finally d) generational conflicts through the developmental phases of the lifespan - all of which would render adaptation of such a programme at all social levels (not to mention all cultures) extremely difficult. This is not to say that such an enterprise is undesirable or even impossible. Theoretically at least, dispersed and localised 'cells' of action, if well co-ordinated, can accumulate, can influence critical bifurcation points and given time, may well achieve a qualitative transformation of the dominant attractor. The main problem is that the time taken to implement historical change on a mass level is inversely proportional to the size of the group working to effect such a change. Given the inertial factors listed above, the implementation, co-ordination and completion of such a programme in time to avert the more serious consequences of systems collapse are, at the very least, unlikely.

Neither, as we have seen in previous chapters, is the social science establishment likely to foster such a programme, embroiled as it is in the defensive and containing functions of resource-controlling institutions and power structures. Heilbroner is well aware of this when he writes: "*The observer of the natural world ... is not morally embedded in the field he scrutinises. By contrast, the social investigator is inextricably bound up with the objects of his/her scrutiny, as a member of a group, a class, a society, a nation, bringing with him/her feelings of animus or defensiveness to the phenomena he/she observes... his/her position in society - not only his/her material position but his/her moral position - is implicated in and often jeopardised by, the act of investigation, and it is not surprising therefore, that behind the great bulk of social science we find arguments that serve to justify the existential position of the social scientist*" (p.21). Our discussion so far suggests that striving to effect change by utilising psychological science in the interests of promoting trauma annealing, increased self-awareness and insight into the roots of the human condition (as Freud and many other psychoanalytically-oriented visionaries have always hoped), is even less likely to be favoured by future governments than it is by those of the present, since future measures taken by those in power to avert or minimise the impending catastrophe are likely to be draconian and current tendencies indicate that the chief concern of such governments will be short-term but constant coercion of the population through intensified technologies of social control, supplemented by the application of neo-behaviourist psychologies and supported through the intensive use of media and even psychotropic drugs. Why bother to invest resources in the time-consuming and expensive process of investigating or annealing the ever-troublesome, over-complicated 'black box' when the output of such a box can be adequately controlled in the short term through stimulus and response, through fundamentalist religion or, if all else fails, through fear? For many of us these societies may herald the evolutionary twilight of the species, but through failure both in knowledge transmission and the ongoing process of acculturation over increasingly brief lifespans the coming 'dark age' may not seem dark to those who inhabit it.

Heilbroner correctly identifies the breaking of the 'bonds with the future' as a symptom of the chronic anxieties experienced within Euroamerican culture in the face of imminent transition: "*indeed, it is the absence of just such a bond with the future that casts doubt on the ability of nation-states or socioeconomic orders to take now the*

measures needed to mitigate the problems of the future" (p.139). This underscores the failure of all four of Lifton's modes of 'virtualised immortality' to catalyse any practical techniques of envisioning the future that may open, let alone broaden, the range of historical choices potentially available to us (ch.8.6.3). "*Posthistoric society is best conceived*" Heilbroner observes, "*not as a freely undertaken movement upwards, but as a forced adaptation to the boundaries of organised collective life*" (p.27) and concludes with the pessimistic statement: "*if then, by the question 'is there hope for man?' we must ask whether it is possible to meet the challenges of the future without the payment of a fearful price, the answer must be: No, there is no such hope*" (*ibid.* p.162). Yet why should their not be hope? By backing away from the most immediate and pressing concerns of contemporary history and gaining a greater sense of perspective, a wider range of historical choices may be more available than we think. Laszlo's 'Macroshift' (Laszlo 2003), if it is to become a reality, cannot emerge spontaneously, but must be intelligently engineered. This would require maturation through a far deeper appreciation of the nature of mind, at least on the part of a significantly active, well-co-ordinated segment of the population.

12.2: Life as an emergent property of matter.

We have already seen how "information of state is endemic to the deep structure of the universe" (Amoroso & Martin 1995), and how all biological experience is encoded at the deepest levels of ultrastructure, at the interface between 'prespace' and experiential reality (Satinover 2001; Woolf & Hameroff 2001). This may lead us to presume that life itself is a universally emergent property of matter when and wherever conditions permit, that it is the explicate unfolding of orders that are implicate at the level of ultrastructure (Bohm 1980). Astrochemistry reveals that the building blocks of life are plentiful throughout the known universe. It is also well known that every atom of every living thing on Earth was once forged in the heart of distant alien suns. We are made of starstuff, and the true 'mothers of life' in the Cosmos are those supernovae remote in time and space, whose cataclysmic transformations fused atomic nuclei into more complex arrangements and thereby increased the amount of chemically enriched matter over time. Such enriched matter, present in molecular clouds, condensed to form the later-generation stars of which our own is one. Life therefore evolves in proportion to the increasing levels of chemicity in the universe. According to the Copenhagen Interpretation this rate of chemicity determines the rate of T in the Heisenberg indeterminacy relation $E = \hbar/T$ governing objective reduction (quantum collapse) in quantum consciousness, where E is the magnitude of quantum superposition, \hbar = Planck's Constant over 2π and T is the time until quantum collapse - the 'when' of life's appearance (expanding on the visual perception model presented in Woolf & Hameroff *op.cit.* p.476).

In the lifetime of the known Universe, the 'star-forming era' is the era during which conditions of interstellar pressure, localised gravity fields, temperature, matter density and chemicity are in appropriate balance to permit the emergence of the carbon-based biological process we call 'life'. According to contemporary models, the 'window' of the star-forming era is a comparatively brief period lasting from c. $10^7 \rightarrow 10^{13}$ terrestrial years along a total expansion timeline of the open universe model of $0 \rightarrow$

c.10¹⁰⁰ terrestrial years. This window is bounded by epochs of comparative 'darkness', the former epoch being too hot and dense for life to emerge, the latter too cold, although these epochs of 'darkness' probably represent lacunae in our current knowledge rather than actual physical realities. Given the presumed ubiquity of the appropriate conditions for star formation across the fabric of the Universe, we may assume in accordance with the *Weak Anthropic Principle* (Barrow & Tipler 1986) that physical constants remain sufficiently similar and stable throughout this period and across the fabric of the known Universe to permit the emergence of biological processes whose fundamental principles are congruent to one another.

The 'where' of advanced life-forms may be guided by, although not necessarily confined to, conditions expressed in the so-called *Drake Formula* - a probability sequence intended to provide a statistical estimate of the number of advanced civilisations in a galaxy, but in reality, a sequence of preconditions for the emergence of intelligent life. A common form is:

$$N_c = R^* f_p n_e f_l f_i f_c L,$$

where N_c stands for the number of possible civilisations in a galaxy, R^* is the rate of star formation, f_p is the fraction of stars accompanied by planets (increasingly discovered to be the rule rather than the exception), n_e stands for the number of stars containing planets within their *ecospheres* (an *ecosphere* being the area around the star where conditions are not subject to extreme temperatures), f_l stands for the number of planets on which life (i.e. some form of biological matrix) actually evolves, f_i is the number of planets where one or more life-forms actually attains intelligence (depending on how we define it), f_c stands for the number of civilisations that achieve the capacity for interstellar communication while L stands for the 'lifetime' of any such civilisation and may be a barrier for most emergent species - a form of natural selection may operate at the cosmic level as well as at the planetary. It is not unlikely that the rate and pattern of speciation within any biological matrix may correlate strongly with the spectral class and nuclear evolution of the parent star (i.e. see the speciation pattern of our own planet as described in Kauffman 1993 pp.76-7; 1994 pp.199-201 - ch. 8.3.3, this study). For life (f_l) to evolve, a sufficiently long period of time is required in terms of stellar evolution. This would preclude massive, short-lived hot stars of the main spectral classes O₉ - B₀ and probably the middle range classes A₉ - G₅ where chemicity may be insufficiently rich and radiation from the parent star too intense for the delicate processes of biological synthesis to take place over a time-span long enough to permit complexity. Suitable crucibles for life would probably be the longer-lived 'Main Sequence' yellow and red dwarf stars of spectral classes G₄ - K₀, although it has been suggested that the radiation flux of our own Sun (G₂) is near the limit of hospitability for biological life. The intensity of the Sun's radiation flux may have driven evolutionary rates comparatively quickly, exacerbating hysteresis effects between levels of evolutionary process and contributing to humanity's neoteny-derived reproductive trauma. K and M-class stars may favour slower rates of evolution. Assuming (at the very worst) humanity's imminent extinction, would another self-conscious technological species emerge on Earth? Robert Zubrin has reformulated

the Drake equation to include the possibility of more than one such species emerging sequentially during the history of a star, i.e.

$$\text{rate of demise} = N/L = n_s f_g f_b f_m / t_r = n_b / t_r = \text{rate of creation (Zubrin 1999 p.253),}$$

where N and L are defined as previously, t_r is the regeneration time, n_s is the number of stars in our Galaxy, f_g is the fraction of them that are 'good' - i.e. within spectral classes G - K, f_b is the fraction with active biospheres, f_m is the fraction of biospheres that are 'mature' and n_b is the product of these last four factors, giving the number of active mature biospheres in the Galaxy. Setting n_s at 400 million, f_g at a probability of 0.1, f_b at 0.1, f_m at 0.5 and taking the average lifetime of planet-bound civilisation to be 50,000 terrestrial years, Zubrin estimates that there are about 5 million civilisations currently active in our Galaxy that are at a similar or greater level of technology to our own.

Where are they then? "*If they existed*" asserts Enrico Fermi, "*they would be here*". Not necessarily. Fermi works on the assumption that extraterrestrial beings have the same motivational drives as we do, but it may well be that the challenges posed at each evolutionary level may be radically different for each biological matrix, or that civilisations that have long emerged from their evolutionary substrate remain undetectable since they are using forms of communication far in advance of our own. Moreover, the possibilities of more than one species emerging sequentially during the lifetime of a star may be slim. Our Sun is now half-way through its 'main sequence' phase. Its nuclear cycle is slowly changing as it traces its path along the Main Sequence towards expansion into a red giant, and changes are gradually occurring now, not all at once in some hypothetical future 4 billion years hence. The planet may become unsuitable for contemporary humans in as little as two million years' time. Unless human evolution becomes self-directed, humans may simply represent the completion of one evolutionary cycle within the greater cycle of phyla - sea creatures, reptiles, mammals, insects, plants - each cycle adapting to and dependent upon, minute shifts in the solar spectra before accumulated changes in the parent star render all terrestrial life extinct (Dixon 1998). The 'pleistocene window' that fostered human emergence may soon close, giving us only one shot at emergence into the Galactic community - and at present, we are accelerating this closure. If we fail to take advantage of this window, leaving everything up to the 'Law of God', or 'Mother Nature', human civilisation may turn out to be nothing more than a single flicker of light upon a world that has emerged from and will soon return to, conditions inconceivably alien to those we assume to be so stable.

12.3: The role of emergent consciousness.

If biological life is an emergent property of matter, then psychology (the evolution of consciousness) is clearly an emergent property of biological life. This is a generalised restatement of both 'Strong' and 'Weak' forms of Barrow & Tipler's *Anthropic Cosmological Principle* (*op.cit.*), implying that the evolution of consciousness (information of state) would appear to be closely bound up with the destiny of the universe, but what ultimate role consciousness may play in this destiny cannot be known at the present time. We have seen how from the quantum viewpoint, a biological species

may be considered as a mesoscopic quantum system - a matrix or energy field through which the computational power of prespace becomes compactified, expanded and translated through the spectrum of configurational levels from micro- to macrostructure - which in turn feed information through the combined operations of perception and cognition back to the domain of ultrastructure (App. 8). Consciousness is not proportional to size but to the degree of complexity, both of the individual organism and of the biological matrix in which it is embedded. The mesoscopic 'quantum' of consciousness on our world - the human brain - lies near halfway between the ultrastructural and the macrostructural and may be optimal for accessing and eventually even engineering both domains. This means that each living individual is a microfunction or 'hologram' of the self-awareness (information of state) unfolding throughout the known Universe (Laszlo *op.cit.* pp.70-1). In translation from the quantum state, universal 'information of state' becomes embedded within a biological matrix and 'arises in multiplicity' through the psychohistorical evolution of a self-reflective species. The timeline of the individual is thereby embedded within and expanded fractally through, the evolution of a culture and the general history of that individual's species. But while consciousness itself may be endemic to the structure of the universe, its particular expression in any biological matrix will depend on the peculiarities of its embedding and will be (at least initially) subject to the constraints of that embedding.

12.4: The Kardashev Phases and intervening transition points.

In 1964 the Russian astronomer Nicolai Siemienovich Kardashev proposed a tripartite phase model for the evolution of galactic cultures. This sequence of three phases has by now been expanded to five, as follows:

Phase I (K_1) - Planetary: A civilisation utilises the total resource base of the home planet.

Transition: ($K_1 \tau K_2$)

Phase II (K_2) - Stellar: A civilisation utilises the total resource base of the home stellar system.

Transition: ($K_2 \tau K_3$)

Phase III (K_3) - Interstellar: A civilisation utilises the resource base of a galactic cluster or number of stellar systems.

Transition: ($K_3 \tau K_4$)

Phase IV (K_4) - Galactic: A civilisation capable of utilising the resource base of an entire galaxy.

Transition: ($K_4 \tau K_5$)

Phase V (K_5) - Metagalactic: Part of a group of civilisations directing the evolution of the Universe.

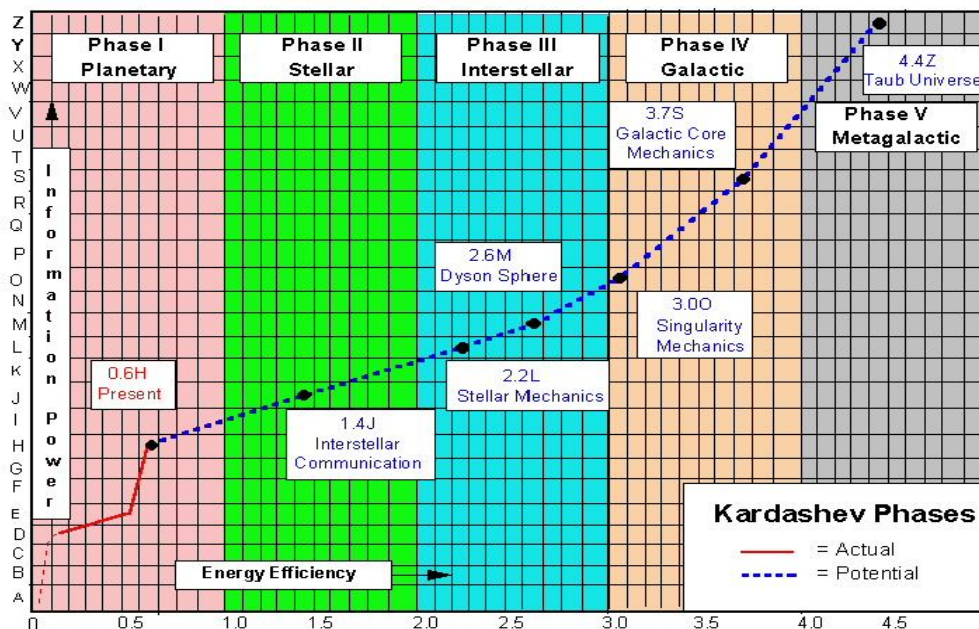


Fig. 12.1: Kardashev Phases in the Evolution of a Species.

A civilisation of Type II.2L may be expected to undertake major projects in stellar engineering. A civilisation of Type II.6M may have the ability to construct a Dyson Sphere - an artificial biosphere around its parent star that will utilise or convert the star's energy with 100% efficiency. Both such civilisations will already have developed means of interstellar communication and travel. The consensus is that terrestrial civilisation currently stands at 0.6H although in reality, we are as yet nowhere near K_1 .

The Kardashev Sequence is not a 'recipe for progress' but a delineation of the evolutionary challenges likely to be encountered by a space faring species. Each phase clearly delimits a major environmental and evolutionary boundary and Fig.12.1 above maps the progress of hypothetical civilisations through the entire sequence. The abscissa or x-axis represents the degree of efficiency with which energy is utilised, while the ordinate or y-axis shows the efficiency level of information processing. A hypothetical civilisation at phase X will have reached the technological level appropriate to that phase and is called a *Type X* civilisation and for every species moving along this chart, seeking to carve its own path from 0.0 to 5.5, each transition between one phase and another will present evolutionary challenges equivalent to, or far greater than, those facing us at present. Terrestrial civilisation is now at K_0 and is converging towards K_1 - a point it has not yet reached and may not reach if the imminent crisis cannot successfully be negotiated. Although current technologies are just about adequate to the task of initiating the $K_1 \rightarrow K_2$ transition, our evolutionary and cultural constraints must first be acknowledged and challenged, and to challenge them is to challenge what we believe to be the essence of 'human nature', provoking extreme anxiety at the deepest levels of the unconscious. Only by confronting these constraints will it become possible to transcend

them and adopt the strategies necessary to surmount the hardships of transition - should we choose to do so.

It is not a good idea to 'wait' until we supposedly reach K_1 before we decide to advance to K_2 . If imminent systems collapse at the K_0 phase may entail both knowledge death and the depletion of critical resources, a dual process would be necessary whereby convergence to K_1 is catalysed through simultaneous initiation of the transition to K_2 . This initiation would greatly expand the resource base available to Earth and provide the challenge of an outer 'frontier' (Zubrin 1999; O'Neill 2000) that will both alleviate the growing anxieties of reactivated impingement and obviate the self-destructive response to these anxieties. Simultaneous negotiation of both pathways may be the only route towards species maturation and a viable long-term future.

The structure of long-wave economic cycles currently suggests simultaneous convergence to K_1 and transition to K_2 . The existence of these cycles or Kondratyev waves of an approximate 52-year duration prior to the Industrial Revolution remain contentious issues, but their structure emerges clearly during and after the 18th century. We have so far experienced five major Kondratyev cycles, each of which was initiated by a wave of 'core' technologies. A sixth cycle is imminent, and its effects are already beginning to be felt. According to Tylecote (1993) the core technologies that initiated each of these cycles are as follows:

- 1) Water (Britain) beginning c. 1780-90,
- 2) Steam Transport (Britain - US) beginning c. 1828-32,
- 3) Steel and Electricity - c. 1874-80,
- 4) Fordism c. 1913-18
- 5) Microelectronics c. 1973-83
- 6) The imminent 6th wave - The GRAIN technologies (Genetics, Robotics, AI and Nanotech) c. 1995 -

The upswing or A-phase of each wave marks the resolution of adaptive crises specific to the previous wave and subsequent market expansion. Market saturation, plus the emergence of the innovative technologies of the successor wave, mark the downswing or B-phase. The specific combination of crises, whether political, social, financial or infrastructural, render the exact structure of each wave difficult to quantify or replicate through predictive models (Reijnders 1990), but one thing is clear - their successive effects are accumulative, suggesting an imminent phase transition. The final wave - the imminent sixth of the series - presents the most serious social and political challenges to date. This is because the GRAIN technologies will create a far more integrated and interdependent network than did previous sets of core technologies and because the entire network shares a set of revolutionary paradigms in the scaling and quantification of information, i.e. what we know as *nanotechnology* and *nanoscience* - the engineering of *ultrastructure*. These technologies may well challenge the nature of being as we conceive it, pushing us either beyond the collective event horizon of birth towards the unknown or, if these challenges are refused, towards withdrawal, stasis and possible evolutionary decline.

12.5: Sigmoid evolutionary models.

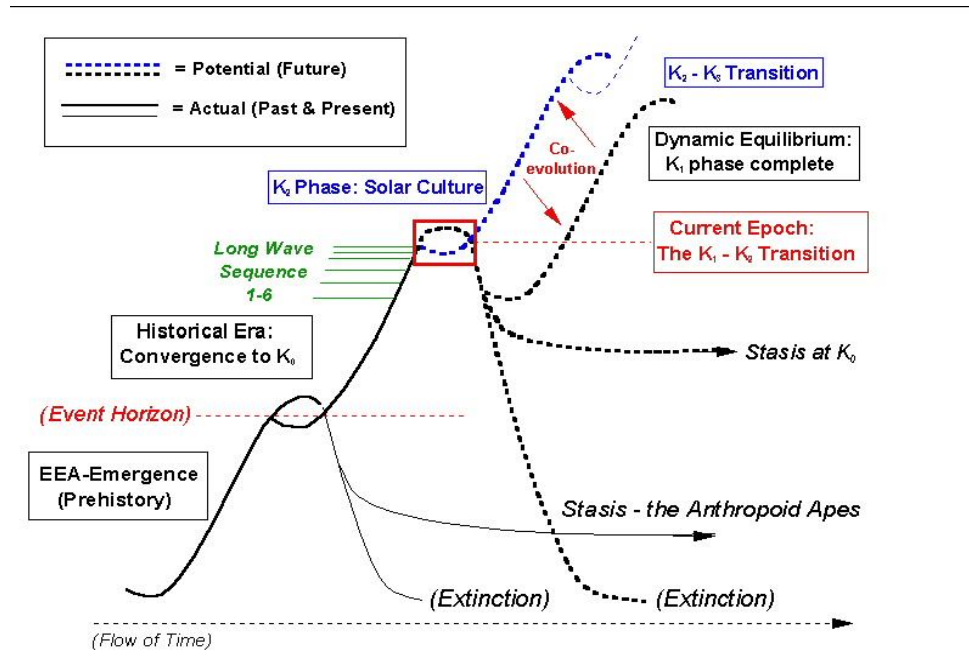


Fig. 12.2: Transition Steps in Human Psychohistory.

These curves and the events they contain, are, for the sake of clarity, not drawn to scale. The 'emergent' curve is much longer, and the series of Kondratyev Cycles or Long Waves is far more compressed in historical time.

The *sigmoid* or S-shaped function is a basic visual dynamic representing transition at all levels in physical, biological and evolutionary systems. The sigmoid represents a shift from one dominant 'order parameter' to another (Haken 1996). In neural networks, this shift occurs through the accumulated potentiation (through Hebbian reinforcement) of synaptic groups which mark new pathways of learning and adaptation (Edelman 1987 2000; Kauffman 1993 pp.227-30). Expanded to the level of group behaviour, this model has also been applied by management consultants to illustrate the process of qualitative change in organisational learning, leadership modes and the development of new market-adaptive strategies (e.g. Flude 2002). Fig.12.2 generalises this stepwise model to human psychohistory - a model also advanced by Toynbee in *A Study of History* (Toynbee 1972). Three clear steps are discernible in this model, two of which have already been actualised. The first step (lower left) shows the emergence of humanity from its basic anthropoid substrate. The second step marks the creation of culture and the epoch of recorded history. The transition point between steps 1 and 2 (called an 'event horizon' by Flude *op.cit.*) - involved deep traumatising, and the residue of this trauma is still very much with us. At this transition point, the effects of generic trauma - that of reproductive strategies and of the birth process itself - were aggravated by further changes in human social structure which further intensified the dynamics of

dominance and aggression (Freud 1913). As cultures became more complex, the increasing need to erect inner defences against this traumatic residue became the main catalyst for cultural acceleration - a self-reinforcing process. Tensions between the rapid advance of culture and the failure of our reproductive strategies and childrearing modes to cope with this advance renders the pain of 'progress' ever more acute (Freud 1930), prompting St. Paul to observe that "*we know that the whole of creation groans and travails until now*" (Rom. 8:22) - meaning by 'creation', above all, the human *ecumene*. As we approach the 'event horizon' between steps 2 and 3 in Fig.12.2 (the red box), the first impact of the 'sixth wave' technologies is beginning to recede due to prohibitive legislation and social anxiety, while the general upswing propelled by the previous five cycles is slowing down due to diminishing marginal returns (population pressures, acute social inequalities, social instabilities and war, environmental degradation and political paralysis), but an initial recession of the new technological wave is normal - similar periods occurred in previous cycles while social, political, financial and industrial infrastructures were forced to adapt and implement change in response to the market requirements of the new technologies. Future options are as follows:

- 1) Failure to complete the $K_1 \rightarrow K_2$ transition, which will have two possible consequences:
 - a) *Temporary stasis* - a system of *Nash equilibria* (Kauffman's *Error Catastrophe Theorem*) in which, through intense social control, well-defined, eco-totalitarian economic blocks will be maintained and will interact cyclically in dynamic equilibrium at K_0 , that is, at less than optimum levels. The previous transition saw other major anthropoid apes (chimps, orangutans, gorillas and baboons) settle into various types of Nash equilibria with their environment - a less than optimal arrangement since they have adapted too thoroughly and cannot now cope with environmental threats. Static human societies will still face extinction in the longer term, either with a bang (total war, the immediate effects of climate change, epidemics or other natural catastrophes we will then be technologically unable to deal with) or with a whimper (slow degeneration, attrition and decay, perhaps aggravated by one or more of the aforementioned natural catastrophes).
 - b) *Extinction in the shorter term* - this was the fate of various other proto-humanoid lines prior to the domination of *Homo Sapiens*, and is most likely to happen to *Homo Sapiens* through a combination of climate change, environmental destruction, epidemics and war. Ultimately, the hysteresis effects that still bind human culture to its evolutionary substrate will be stretched to the breaking point, and "*whereas other animals adapt through the slow process of evolution to fit into their environment, man was able to change his environment to suit his current needs, reaping a short-term advantage in the process... and ...called a halt to evolution as applied to himself. The result was a world overburdened by a population of beings unable to survive without their own conscious intervention, a world given over to the essential needs of man, a world poisoned by his waste. Ultimately the*

earth could no longer supply the raw materials needed for man's agriculture, industry or medicine, and as shortage of supply caused the collapse of one structure after another, his whole complex and interlocking social and technological edifice crumbled. Man, no longer able to adapt, rushed uncontrollably to his inevitable extinction" (Dixon *op.cit.* p.32). The collective womb, as engineered by science, will ultimately prove as treacherous as the 'natural' one.

- 2) Completion of the $K_1 \rightarrow K_2$ transition, in which the technologies developed in the course of the emerging sixth wave will assist in the growth of a new Type K_1 culture on Earth as well as the initial establishment of permanent colonies on the Moon, Mars, the asteroids and satellites of the gas giants and the building of O'Neill-type habitats at planetary Lagrangian points (O'Neill 2000) - all foundational bases for the emergent K_2 culture. The mutually-sustaining co-evolution of both terrestrial and Solar cultures will ensure the stability of both, and mark the next stage in the historical evolution of the species.

12.6: Resolution of the Fourth Discontinuity: trauma annealment and the path to maturation.

The healing of *historical* trauma through the accessing and gradual annealment of *generic* trauma is a prerequisite for those engaged in catalysing either transition: $K_0 \rightarrow K_1$ or $K_1 \rightarrow K_2$. A species can be considered 'mature' or 'intelligent' only to the degree that it cares for each and every member equally and maximally, as well as for its own matrix of embodiment (its environment) and any culture it creates can be considered 'advanced' or 'scientific' only to the degree that it is at once rational, benevolent and compassionate. Trauma-induced dominance-submission dynamics or pseudo-heroic Ice Age evolutionary prescriptives ('to boldly go...') cannot possibly deal with the immense environmental challenges of the $K_1 \rightarrow K_2$ transition, nor of subsequent Kardashev levels. For a mature species, 'reverence for life' may be an innate characteristic of its members, not an issue for debate - not because of any imperative imposed from 'above' or from without, but because the carefully planned, engineered replication of its own life will be beset by environmental challenges on a scale never before experienced and such a species will fully appreciate how rare, precious and vulnerable the phenomena of life and consciousness truly are. The exigencies of survival and growth in extremely hostile, non-terrestrial environments will require that a Type II species should not be a seething, competitive and random-replicating mass of cells but a polycentric, superorganic entity, a metacomplex, self-determining structure whose boundaries are not fixed, but fluid, expanding, contracting and transforming in response to the evolutionary challenges of each Kardashev level - an entity *fully aware* of its position in the 'liquid region at the edge of chaos'. This has nothing to do with the supposed creation of a race of 'perfect' superbeings. The word 'perfect' has no meaning in evolution - any new speciation path free of the constraints of its branch of origin will encounter new challenges and constraints arising from the evolutionary path it has chosen.

The 20th and 21st century ideological clash between 'capitalism' and 'socialism' is the historical expression of tension between opposite poles of an ultimately convergent process balancing the needs of the many vs. the needs of the one. Our continued dichotomisation with respect to these economic models clearly reveals the atavism of our present psychology. The Marxist dream of a 'classless society' was a premature envisioning of the polycentric societies of the far future, but the forced, 'apocalyptic' implementation of this dream - an implementation driven by the perinatal fantasies of the *Lessing Complex* (ch. 2.6) - seemed far more feasible for those societies whose historical structure was always totalitarian, leading to the paradox that, in seeking prematurely to establish the infrastructure of a polycentric society, the 20th century totalitarian states actually regressed to the far more archaic structure of the 'primal horde'. Capitalism, an economic system based on self-interest, is a far more authentic response to basic *evolutionary* drives but one which, when faced with the complexities of a late-stage culture, has both amplified and exacerbated the counter-adaptive nature of these drives. This does not mean that global capitalism is 'evil', simply that it is the culmination of a historical system - an all-embracing one, whose accelerating complexification has forced us to confront the basic evolutionary constraints of the species and which forces us to choose whether to remain within those constraints or to transcend them. Faced now with the critical boundaries of complexity, the main driving force behind contemporary global capitalism and the free-market economy has become regression to the most primitive of all collective, neoteny-derived fantasies - a retreat into the intrauterine paradise where the potential for aggressive economic growth is imagined to be boundless (Wasdell 1992). In such a regressive condition, transition or transformation simply cannot be countenanced, yet as we have seen, it is the very dynamics of business, of globalising capitalism, that have driven us inexorably towards the edge of transition.

Analysts such as Fukuyama may bemoan the imminent death of 'human nature' as we know it, but this is unlikely to happen - the 'human family' will not be 'forced' collectively towards transition. Nevertheless, the core technologies of the imminent sixth wave suggest that the emergence of other, 'transhuman' natures will become possible for the first time in history - i.e. other modes of being and of intelligence, other ways of envisioning and planning for the future than the trauma-induced, species-narcissistic myopia that has always precipitated the cyclic repetitions of history and continues to dominate the present, other bonds of affiliation than the inherently unstable, trauma-contaminated, projective-introjective and paranoid symbiotic clinging that is too often mistranslated as 'love' or 'sense of community'.

The GRAIN technologies will assist both physical and cultural evolution to become self-directed, but the constant power of self-recreation inherent to organic life can be harnessed to this end only if K-type reproductive strategies are consistently adopted by those engaged both in perfecting these technologies and catalysing any path of evolutionary advance. The annealment of generic trauma must be a core factor in these strategies, supported by an educational system that constructs the edifice of science upon a firm substrate of resonating concern, consummate perspicacity and a vibrant, empathic appreciation of the infinite potentialities of Being. Such qualities can only emerge to the extent that the Fourth Discontinuity is resolved, i.e. that Id is assimilated into Ego - the

main purpose of culture as envisaged by Freud. If a certain segment of the population of Earth chooses and pursues the path of psychogenic advance, this advance can be jeopardised neither by the whims and pathologies of individual parents nor by the regressive and restrictive dynamics of group (and institutional) fantasy. As long as an individual of the species can breed at whim and have complete control over 'my kids' - particularly in the primary phases of child development - and as long as institutions continue to function purely as 'anxiety-containers' without any incentive to foster change, individual and shared trauma as well as emotional patterns and mental 'frames' representing power and dominance will continue to be communicated transgenerationally over time. Whether this is 'good' or 'bad' is not at issue here. While the resultant chaos and self-perpetuating cycles of historical tragedy may be preferable to many if not most (i.e. submission to the 'Law of God', to Mother Nature', to social Darwinism as God-substitute, or to 'that which makes us authentically human'), no directed advance towards maturation is sustainable under these conditions.

12.7: Resolution of the Fifth Discontinuity: challenges of the $K_1 \rightarrow K_2$ transition.

In the K_1 and all succeeding phases, machine intelligence will eventually merge with organic intelligence, but we should not think of 'machine intelligence' in terms of what we see as such today. It is not so much a question of the 'replacement' of flesh by metal as much as a process of superposition, integration, co-evolution and finally, fusion at the level of ultrastructure. Interstellar exploration and contact can *only* be undertaken by purposefully evolved intelligences that are both hybrid and self-directed. Permanent existence in the extremely hostile conditions of space does not favour organisms finely adapted to planetary environments. It has been said that when we emigrate to space, we will 'take out environment with us', but this is highly unlikely. Even if survival were possible for a limited period under extremely 'protected' artificial conditions on an alien environment such as that of Mars or the Lagrangian colonies proposed by O'Neill (2000), accumulated mutations caused by heavy and constant radiation would eventually induce speciation in radical and unpredictable directions (the 'Founder's Effect'). Sexual reproduction and 'natural' organic birth are not only maladaptive, but may prove impossible under such conditions (Schwejte 1990). Consider the sensitivity of the growing zygote to terrestrial conditions of atmosphere, pressure and gravity. How will it evolve under conditions of reduced gravity, weightlessness, different atmospheric composition and pressure, or unavoidably increased radiation? These considerations, involving not only physical transformation but above all, psychological, are not fully taken into account even by the 'boldest' SF visionaries, let alone by NASA or ESA-based researchers. This why Lem declares it extremely difficult for contemporary SF to predicate narratives derived from our own evolutionary experience onto situations where unknown psychological (let alone physical) mutations may have taken place. An 'authentic' account of life in Type II or 3 cultures - where our current assumptions about human nature will belong to prehistory - would be incomprehensible at the present time, even intolerable, let alone unreadable. Current research into the psychology of isolated or confined communities such as that found in Harrison *et al.* (1990) on the whole appear to reflect (with few exceptions) a predominantly neo-behaviourist concern with keeping future longer-term space crews and every aspect of the mission firmly under mission

control. This approach is futile. At the present time, the crew of any future expedition to Mars that is composed of the 'right stuff' would swiftly descend into psychosis as soon as they left the orbital range of the Earth-Moon system. Voyagers and colonists of a Type II culture "*will be distinguished by self-discipline, by an ability to meet the requirements of the machine, to repress fear, desire, all emotion. They will belong to a breed apart, cut off from family, the consolations of love and sexuality. After they have endured the initiatory ordeals of training, their physicality will be measured by the requirements of the machine. Life in space ships is as closely regulated and lonely as life in a monastery; the greatest virtues are those of restraint, not excess. Voyagers and colonists of a Type II culture will voluntarily cut themselves off from earthly satisfactions in order to approach closer to the infinite. They will choose to lose their unique human identity in order to transcend the limitations of that identity*"¹. The cares and concerns of mission control will have little meaning for such entities.

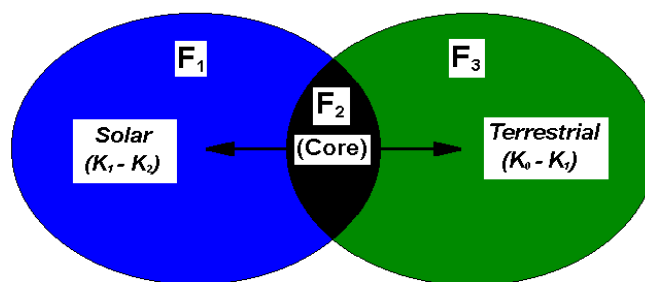
New species that have evolved either through accumulated mutation or directed bioengineering will have very different psychologies from those of terrestrial humans, and these psychologies will not necessarily be compatible. Much current AI research still tends to be 'projective' and anthropomorphic - man 'creates' another entity in his own image rather than gradually 'assimilating into' that entity. AI researchers have so far failed to comprehend and engage directly either with the ultrastructural processes that compactify and enable the swift response capabilities of a living organism or with the stress-induced deformation of morphogenetic fields during intrauterine growth and parturition that is the root of the AI-researcher's 'Holy Grail' - the simulation of human emotion. An organic being is extremely sensitised to its environment - the very surface of its skin is composed of cells, each of which contains the information (DNA) necessary to replicate that organism - the 'quantum holograph'. Entities adapted for permanent existence in space or on the outer worlds would require traits necessary to protect them in these environments. Adaptations may include extended life-spans (necessary for the sustained creation and management of an extraterrestrial culture), chitin-based exoskeletons, titanium-based endoskeletons, panspectral vision, or many others we cannot at present foresee. It is unlikely that such traits will evolve 'naturally' from the terrestrial genome through the 'Founder's Effect', and besides, such 'natural' evolution, even if statistically possible, would involve inconceivable and probably destructive, trauma. Given the extreme environmental sensitivity necessary for successful adaptation, the evolution of autonomous cyborg entities possessing these traits whose intelligence will be different from (not necessarily 'greater than') that of terrestrial organisms, will depend on significant advances in the core technologies forming the crest of the sixth wave - the GRAIN technologies, which will include genetics, robotics, quantum-based AI, nanoengineering (Drexler, 1996) and nanomedicine (Freitas, 1999) as well as biotech, space propulsion systems and new, far more efficient advances in materials science and energy use (both for terrestrial K_1 and Solar K_2 cultures). The cyborg composite based on genomes *evolved* from the human through integration at the level of ultrastructure - i.e. through a *gradual marriage of the meat to the metal* - will replicate according to a self-directed process in which the organic phase of the species will eventually be understood

¹ Paraphrase of Pat Vincent's Introduction to the work of the SF artists Peter Elson and Chris Moore (Elson & Moore 1981).

for what it is - a transitional phase between inert and fully sentient matter. It is this transformation of post-transition reproductive strategies through a combination of advanced GRAIN technologies conducted in an exowomb environment that will catalyse profound psychological change. Research and development in this direction at the present time must be undertaken above all by the *private* sector since governmental and national institutions are far too closely bound to the projective group-fantasies of the electorate to be able to initiate such anxiety-provoking ventures - such institutions will, on the contrary, seek to constrain and inhibit such research through legislation.

12.8: Catalysing the transitions

Historically, the Joachimite construct created a synthesis of dynamic trinitarianism and existential dualism within a framework of historical immanence which permeated the Euroamerican subconscious (Ziolo 2001a and ch. 2.6 of the present study). If we are to achieve a sustainable society on earth ($K_0 \rightarrow K_1$) as well as the First Kardashev Transition ($K_1 \rightarrow K_2$), a highly effective way would be to adapt the framework of the subconsciously-embedded *Joachimite construct* and synthesise it with an advanced re-working of the *formation process* in order to create an *affiliation* path for the future, one suited to the psychology and conditions of our age. At present, as we have said, we are still at K_0 . To reach and stabilise K_1 it will be necessary to 'seed' the transition to Phase II while the technological ability to do so exists, and foster co-evolution between the two levels. To this end, three foundations could be established. One (F1) would be designed to catalyse the K_1 phase transition on Earth. Another (F3) would have the task of seeding the transition to K_2 . Both will be linked by a 'core' foundation (F2) comprised of specialised Balint groups (ch.11.9.3) whose purpose would be to initiate and maintain the process of annealment within itself and between both other foundations. The goal of all three will be to assist both emigration and transition with minimum negative impact, and to ensure, as far as may be possible, the mutually-beneficial co-evolution of the nascent Type II culture with that of the Earth (Fig. 12.3).



Tripartite Foundation Structure

Fig. 12.3: Division of Labour within a Tripartite Foundational Structure.

The foundations created for this task will be well aware of their potential role in the catalysis of transition and, by careful analysis of the limitations of transformative *praxis* in previous epochs, will constitute an 'ECF-nexus' adapted to the needs and conditions of our age. They will have acquired, through careful training, the personal and social skills and the self-discipline necessary to adapt and develop the older formation program in a way that core trauma can be more easily and empathically accessed and annealed to a degree sufficient for the realities of the future to be confronted without fear, either of social change and transition on earth, or of the severe challenges of the extraterrestrial environment - the outer 'abyss of being'. They will also be deeply aware of the fantasies and defences endemic to institutional and group dynamics, and be thoroughly capable of transcending these constraints. They will be mindful of the fate of the 6th century foundation established by Cassiodorus at Vivarium which, through its strong links to the dominant culture of its time, eventually shared in the demise of late Italic civilisation. They will also be wary of the 'Lessing Complex' - the envisioning and forced implementation of strategies bound to the cycle of perinatal time.

This 'new monasticism' would not follow the Berman model (Berman 2001) whereby persons, either individually or collectively, doggedly seek to preserve and perpetuate isolated and dissociated fragments of the old culture in the hope of some future 'renaissance'. Such attempts, whether individual or collective, are likely to follow the path of Vivarium. The 'new monasticism' will be based on a type of 'selflessness' in which love and Eros are expressed, not through investing mental energies in the reproductive matrix and in the projective-introjective dynamics that bind and constrain 'normal' human relations, but through a non-discriminative care and compassion for the species as a whole, through a deeper, apophatic connectivity with the substrate of Being - the enfielded plenum (Laszlo 2003) - from which they can develop those perspectives on past and future that best facilitate judgement, action, guidance and the pursuit of strategies that minimise or bypass entirely those cruelties of evolutionary dynamics, the blindness of species-narcissism and patterns of dominance and submission that are taken for granted in the realm of 'normality'. The tripartite foundation is concerned, not with a futile, self-defeating 'activism', but with 'action' that best realises Freire's path of empowerment through 'conscientisation' (Freire 1999), through the enhancement of 'originary awareness' - that authentic power to transform the world that is endemic to each and every human being. Again, this was the goal of the old Nexus, but they were unable to penetrate in sufficient depth beyond the 'event horizon' of morphogenetic experience to the very core of the human condition. This is not to say that the goal is some form of egalitarian paradise. The foundations will form a specific kind of élite, similar to that described by Satinover (2001 pp.224-5), but to the purely technological skills described by Satinover, they will add psychological skills developed not through collusionally-defensive modelling, but by the integration of personal and group annealment and formation.

The primary task of the 'core' foundation (F2) is therefore to enhance (as far as possible) the absorption of both the id *and* superego by the ego and to implement the

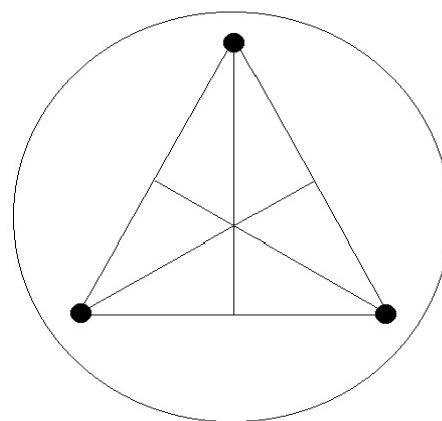
freedom and awareness gained in transcending the 'schizoid barrier' - the basic psychological constraints created through generic trauma, human sexual differentiation, reproductive strategies and child-rearing, power-dominance relations and aggression - the consequences of neoteny-induced dependence. This cannot happen all at once. Mindful of Lessing's dictum, we should appreciate that there will be no great New-Age style 'spiritual awakening' on a grand scale, only decades, more likely centuries, of hard, transgenerational labour. Moreover, transcendence of the schizoid barrier *may or may not* assist the eventual formation of stable societies on Earth. As we have said, truly 'static' societies are impossible given the human life-span, psychoclass interaction and the oedipal cycles of conflict, rebellion and accommodation that are transmitted across generations within and between groups. For terrestrial societies of the future to be comparatively stable, they would have to be guided along a recurrent path of dynamic equilibrium based on an understanding of the cycles of generational interaction as the 'implicate orders' that are realised through the 'explicate orders' of cultural dynamics. The core foundation would seek to foster the emergence of new psychoclasses capable of managing this dynamic equilibrium. The energy sources that power these terrestrial societies will be renewable - i.e. they will exploit to the maximum, the potentialities of 'green' technologies. The 'grey' technologies developed by the Fordist culture in its final phase (nuclear power, chemical engineering etc.) will continue to be developed to a highly advanced level - but *off planet* - by the colonies established on the Moon, Mars, the asteroids and satellites of the gas giants, and in the Lagrangian colonies of open space (O'Neill, 2000).

The main task of the K_2 -oriented foundation (F1) would be to help promote strong links and co-operative action between all organisations, corporations or foundations working on technologies relevant to space research with the aim of establishing the supportive infrastructure of an emergent space-going culture. This infrastructure must be privately-owned - free from governmental interference, if expense is to be kept to a minimum and efficiency to a maximum (we should in this context remember the Soviet cosmonaut Sergei Kiryalev whose country effectively disintegrated while he was in orbit, marooning him in space). The GRAIN-derived technologies and research programmes relevant to a space-going culture can be factored into nine complexes or groups as follows:

- Genetics, biotech and medicine
- Robotics and advanced AI
- Habitat and environmental engineering
- Nanotech, quantum and gravitational engineering
- Protein synthesis, nutrition and hydroponic systems development
- Materials science
- Communications
- Planetary sciences
- Energy sources (including renewables), propulsion and vehicle design.

While these are the base technologies of the $K_1 \rightarrow K_2$ transition, they will also necessarily assist the $K_0 \rightarrow K_1$ transition on earth, forming, as they do, the crest of the

sixth Kondratyev wave. Implementation of the benefits of these technologies would be the primary task of the third foundation (F3). From the very beginning, all three foundations would work within a mutually-sustaining, mutually-catalysing, co-evolutionary framework as shown in Fig. 12.3. Implementation of the psychological programme outlined above, developed within F2, would be 'translated' outwards to F1 and F3 in terms that enhance the capacities of the relevant organisations and companies to develop and sustain the metacomplex patterns of the 'learning organisation'. The adaptive power of the learning organisation is already well known at all levels of management (Wasdell 1992, 1995; McMaster 1996; Senge 1997; Arthur *et. al.* 1997; Axelrod 1997; Sherman & Schultz 1998, Flude *op.cit.*). The transition process would therefore require the enhancement of metacomplex learning systems that utilise energies decathected from personal and group defensive constructs and invested in authentic reality to enable, as far as is possible, intellect, emotion and physicality no longer to operate in schism but to reinforce one another. The dynamics of the tripartite foundation structure would be based on an adaptation of the matrix-based model presented in ch. 11.9.3. In this adaptation, a single triadic cell would be fractally expanded throughout an



The Triadic Cell

organisational structure (Fig. 12.4). We assume for the present that each element in the triad is a single individual.

Fig. 12.4: The Triad as Fractal Cell

A representative from each triad is elected to participate in a 'higher-order' triad (Fig. 12.5) - where 'higher-order' is meant in the sense of function, not hierarchy. This representational function can (and indeed should, whenever possible) be rotated between members of the original triad. From the higher-order triadic group, another representative is elected to participate in a triad of yet higher order, again on a rotational basis (Fig. 12.6). This process may be repeated at any number of levels, depending on the structure of a given organisation - I have chosen to go as far as three simply for reasons of space. Figs. 12.4-6 therefore partially illustrate the process of fractal expansion of the initial triad throughout an organisation of whatever size. Assuming the rotation of triadic elements, this expansion would facilitate a multi-loop learning system enabling the

organisation to develop or enhance the capacity for attaining vertical and horizontal metacomplexity in strategy and action at many levels of task-orientation.

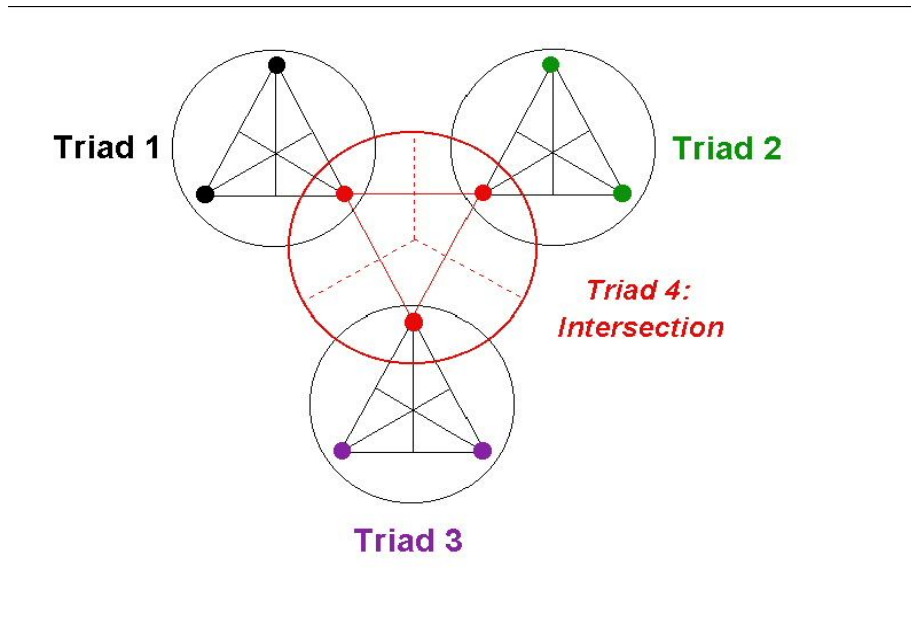


Fig. 12.5: First Stage of Fractal Expansion.

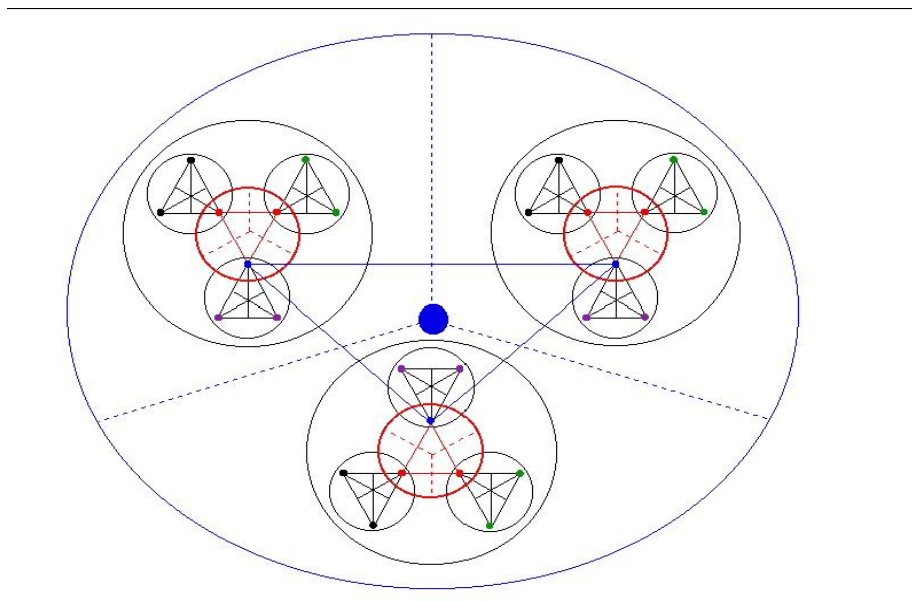
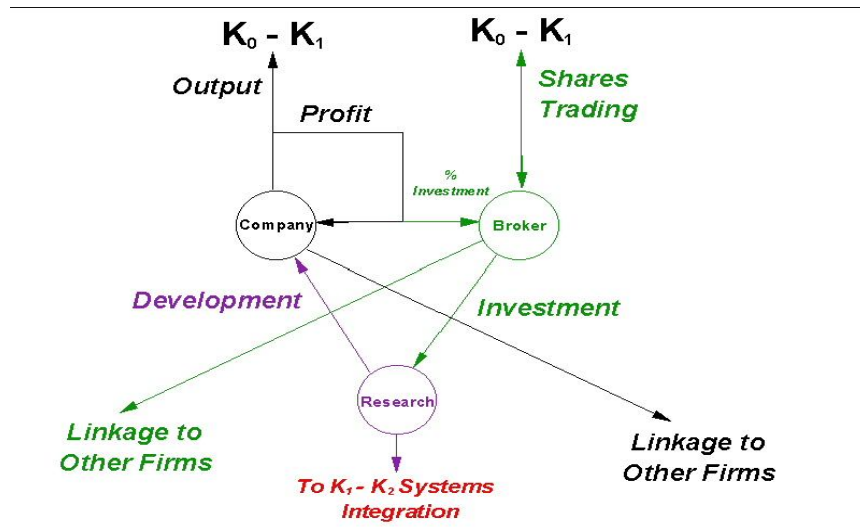


Fig. 12.6: Second Stage of Fractal Expansion

It can be seen from this how the tripartite structure of the foundation will integrate with and enhance each component and phase of the transitions, avoiding the schismatic proclivities of the former Joachimite 'orders'. The coloration of the three triads was

chosen for reasons of differentiation, but also to illustrate the next phase of the model, where the elements are translated into components of a group involved in one of the nine



key technologies listed above.

Fig. 12.7: Structure of each Transition Technology Group

If we now begin at a higher level and assume that the 'dots' of the triad in Fig. 12.4 represent not individuals, but the key divisions of a single organisation, such as production, management and customer relations (each of which may be subdivided to include, for example, human resources, finance, logistics etc.) then the 'higher-order' triad' of Fig. 12.5 may be taken to represent three domains for each group of core technologies linked to the transition (Fig.12.7). In this figure, the 'black triad' now represents the overall, collective production and marketing sections of all technologies associated with a given group. These technologies are distributed on earth, assisting the $K_0 \rightarrow K_1$ transition. The green triad now represents a group of brokers or financial institutions associated with each group. A percentage of the profits is assigned to the brokerage group, whose function is to augment this percentage through stocks and shares investment, both within the core groups and outside of it. The net profit is reinvested in the research sector (purple triad), which will assist the $K_0 \rightarrow K_1$ end of production, but will also adapt that group's technologies to the $K_1 \rightarrow K_2$ transition through co-ordination with a higher level devoted to systems integration (red). This in turn feeds into the central 'core' whose primary task is to organise, equip and co-ordinate the diaspora - the foundation of K_2 colonies. As these colonies become established, constant trade and communication will enhance and sustain the K_1 phase on earth (O'Neill 2000). The entire co-evolutionary, mutually reinforcing complex is shown in Fig. 12.8 below: a vast dissipative structure, synthesising an updated Joachimite construct with a regenerated formation process, whose entropic (dissipated) and metabolic (self-transforming) energies catalyse affiliation on two levels (Fig.12.9). It seems a deceptively simple construct 'on paper', but one which, due to the embedding of the original foundations at all levels within it, is capable of expansive and sustainable transformative power. Fig.

Fig.12.9: Catalysis of the Second Affiliation

12.9: Epilogue.

There is a glut of large-scale schematisations of past and future history currently appearing on the Net and elsewhere. This is in itself a symptom of contemporary anxieties, but at the same time, of a desperate drive to comprehend our evolutionary history as never before. These schematisations are pointless however, if they do not take human psychogenesis into account as a core determinant in history. Psychogenesis, the emergent product of evolutionary morphogenesis, is the source of all implicate orders in cultural dynamics. Seeming order can be fantasised in any random scattering of numbers or events, given a sufficiently large base rate, but without an understanding of the implicate orders at work, any calculations based on explicate orders will represent just another excursion into defensive symbolisation. The models that come closest to approaching the large-scale dynamics of cultural evolution tend, as we have seen in ch. 9, to be chaos-based, mainly because they avoid neither the implications of complexity nor the frequently counterintuitive nature of their conclusions. Toynbee's 'affiliation dynamic' has been presented in this study in terms of the evolution, destabilisation, dissolution, transformation and genesis of strange attractors. The vast dimensionality of these attractors is nevertheless definable and quantifiable (although very large) if we express this dimensionality in terms of that of human groups and their interrelations, remembering that the greater the dimensionality of a group, the higher the degree of repression and the further the regression in terms of unconscious fantasy. The structure and dynamics of these fantasies can in turn be understood in terms of the neural paths that encode residual generic trauma and the degree to which such residue is compounded or annealed within the life-spans of individuals or groups. It is these dimensions that will enhance the predictive power of global models that incorporate nonlinearities.

Transcendence of evolutionary constraints will be necessary both if humans are somehow to survive on this planet and if permanent and independent colonies are ever to be established beyond it - colonies free from dependence upon Earth governments, able to face the physical and psychological challenges of induced mutation in an extremely hostile environment and ultimately capable of fully adapting to it. Freud has claimed that advances in civilisation have only been achieved by an ever greater renunciation of instinct (Freud, 1930). Achieving the $K_1 \rightarrow K_2$ transition will demand a greater renunciation of instinct than ever before, a renunciation possible only through what we have called 'resolution of the fourth discontinuity'. But it is not only a question of adapting to an environment far harsher than ever encountered previously, but also of the deliberate and directed modification and adaption of the human genome to this end - a resolution of the *fifth* discontinuity. Adaption and modification of the genome will occur at least in part through the progressive integration of organic and artificially synthesised matter. This will create radical mutations in psychology as well as physiology. These would occur anyway were there to be no deliberate modification - but much more chaotically and with far less chance of long-range viability. The ultimate challenge will be how to enhance and direct psychological motivation in mutants of this type if the

archaic drives are seriously modified. There are no answers to this question as yet. What will emerge will not only be a new civilisation - but in many ways a new species.

The $K_1 \rightarrow K_2$ transition is necessary if *peaceful* transition to less destructive and more stable socioeconomic systems is to be achieved on Earth. Without it, collapse of the present historical system is unlikely to be peaceful. Frustration of its expansive goals may even provoke the unconscious desire to realise and enact the mythic *telos* or 'omega-point' of the Fordist culture - a search for the *Ginnunga-Gap* through *Götterämmerdung* - self-immolation and delusional rebirth through the 'holy fire' of total nuclear war. If such a vision seems bizarre, horrifying and insane, it nevertheless remains a strong possibility given current global tensions (at the time of writing). It is the 'negative' pole of Euroamerican mass-consciousness which also has its roots in the Joachimite construct - rebirth through Apocalypse. To paraphrase Erich Fromm, frustration of Western man's urge to create through conquest may result in the 'alternative' creation of the drama of universal destruction (Fromm, 1973). This urge may be successfully sublimated only through confrontation with the 'real' *Ginnunga-Gap* of space.

The foundations described above are not the 'social engineers' of new cultures but catalysts of transition. As these 'catalysts' are human and sentient rather than purely chemical, they are unlikely to remain unchanged by the process they catalyse. Like the first Nexus, they are more likely to become assimilated over time within the newly-emergent structures they have helped create, and in the same way this very assimilation would be an indication of their success.

What are the moral implications of the 'grandiose' enterprise proposed in this chapter? Is self-directed evolution a 'good' or 'evil' idea? 'Grandiosity', 'good' and 'evil' are all relative terms defined by individual and group subjectivity - the consequences of generic trauma, augmented by the dominant modes of childrearing of a particular epoch, as well as by the 'ego ideal' - the ego's own specific mode of internalisation and compromise. Such value relativism' does not mean there is no such thing as ethics, only that *group* ethics are dependent upon social space and time and are a function of the psychological state of the group, while a 'transcendent ethic', in the sense of an understanding of and concern with, the human evolutionary prospect, is founded on a 'vibrant, empathic appreciation of the infinite potentialities of Being' - in more concrete terms, a sense of one's personal embedding within the total system of all evolutionary dynamics from the level of ultrastructure to the macrolevel. This has always (up to now) tended to be the prerogative of *individuals* rather than groups. To bind such a transcendent ethic into transgenerational task-oriented groups will be as much the challenge of the future as it was in the past - at least during the 'organic' phase of our evolution. It is the current 'critical point' in the history of civilisation that invites willful and determined action on such an immense scale - and the courage to pursue and to accept the consequences of, free will and self-determination. If we do reach Joachim's Third *Status* it will prove no Utopia - only a critical phase in evolutionary advance. Even if the 'human family' has a common origin as expressed in the root genome, it does not necessarily face a common destiny. Rather than a single species, the human race is now a potential 'speciation crucible' in which future paths of speciation will be determined not

by any racial divisions now existing on Earth, but historical choices pursued by different psychoclasses. If, with the aid of the imminent technological wave, some choose to pursue the path of transition, 'denying their unique human identities in order to transcend the limits of those identities', the vast majority will certainly not follow them, but will react with hostility. Those who choose transition will in all probability need to develop elaborate, subtle and long-term co-operative strategies extending above, beneath and beyond the range of national networks and global economic blocks and, in finally severing all connections to the biological matrix of earth, they will truly be 'born again'. Whether they will weep or exult in their transformation will be their own affair.