

**THE PROGRESS TRAP**  
**Science, Humanity and Environment**

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Global Ecopolitics  
POLI 399G/1

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**July 1990**

Presentation : 17/20  
Term Paper : 29/35

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## **Introduction**

Few environmental problems have aroused public concern as effectively as the depletion of ozone in the upper atmosphere. Where the 'Green' movement was previously considered the lunatic fringe by the general public, it is now taken more seriously. The empirical evidence - ozone holes in the polar atmosphere - gives sufficient proof that all is not well between humans and their environment.

Governments have been slow to act however, and environmental political parties have not gained significant power. The effects of global warming are potentially more disastrous than ozone depletion but the responsible industries and governments have remained cool to reform proposals. Similarly with acid rain, which has degraded lakes, rivers and forests in and around industrial areas.

In a short time the information media have become saturated with the opinions of experts on the threat to the planet. Nobody denies that there is a serious problem, but few have any clear explanations for why these problems arose in the first place, or how to effect lasting alternatives to harmful technologies.

One reason for the evolution of harmful technologies is that people in the industrialised west have long accepted without question the idea that science and technology represent

progress. Another reason is that it is assumed that if such progress creates problems, solutions will inevitably be found by applying more science, more research and more technology.

The purpose of this study is to question these beliefs and to propose alternatives which will not evade the issues but rather, renew our human potential for solving problems.

I will argue that what we describe as civilisation, beginning in the fertile crescent, India and east Asia some five to ten thousand years ago, was not only the happy discovery of new human skills and talents, but also the traumatic abandonment of older customs. The most eloquent description of this paradoxical development is found in the Book of Genesis, after Adam eats from the tree of knowledge:

22 And the Lord God said, Behold, the man has become as one of us, to know good and evil, and now lest he put forth his hand and eat of the tree of life and eat, and live forever:

23 Therefore the Lord God sent him forth from the garden of Eden to till the ground from whence he was taken. (Ch 3.)

The author of Genesis knew then that the tree of knowledge was a mixed blessing. The lines that show this are filled with forboding: 'in sorrow shalt thou eat of it all the days of thy life.'(Ch 3, v 17)

## **The Scientific approach: new solutions, new problems.**

The scientific revolution was ushered in by Frances Bacon in 1620 with boundless optimism, understandable after more than a thousand years of repression of science by the church, and centuries of Platonic disengagement from 'hard' reality before that.<sup>1</sup>

Today the enthusiasm for science and technology is unabated among industrialists and businessmen, but to the layman and to those who have made the environment their concern, skepticism has set in.

The time has come for suggesting that the problems caused by science and technology are inherent in the nature of these disciplines. It is also clear, however, that the fruits of knowledge have not been all sorrow.

An objective, critical look at the history of knowledge, science and technology shows that much of it was produced under prolonged economic and social stress, even distress, and that human and environmental nature have been regarded with fear and suspicion throughout the period of man's intellectual progress.

Science and technology have accomplished both good and evil, but they show a tendency to take one step forward and two steps back. The balance is not even, and every effort

should be made to discover why the mistakes of science become so large before they are arrested, and what we can do to produce equilibrium between science and nature.

It seems reasonable to argue that if scientists were less fearful of nature, they would produce more benign science. Proving this is not easy though, and in a competitive, hostile world, technocrats will not change cultural or educational policy without supporting data and evidence.

### **Culture Shock: from natural to artificial**

. If we follow the growth of science and knowledge back through time to that era when the objective study of nature began, the question arises: did knowledge grow through curiosity alone or was it driven by necessity? Clearly both factors must have been involved. The human motivations for progress were complex and conflicting, the change took thousands of years and involved both discovery and distress.

The beginnings of agriculture date from about 10,000 BC and took place in south east asia where millet and rice were first cultivated.<sup>2</sup> But on account of historical accident and scholarship, much more is known about the agriculture of the middle east, also known as the fertile crescent, where wheat and animals have been farmed since about 8,000 BC.<sup>3</sup>

It is often suggested that humans were happier in their natural state and that all our troubles are a result of civilization. These ideas were common in the late 18th and early 19th centuries, having been popularised by Jean Jacques Rousseau and Frederich von Schelling.<sup>4</sup>

The philosophy of 'natural man' and the 'noble savage' has never prevailed against the logical positivism of the scientific rationalist, who has only to point to the growth of prosperity, medical science and new technology to silence his critics.

Until the spectres of global warming and ozone depletion emerged, eminent spokesmen for science such as Jacob Bronowski could claim that where there was a relationship between science and modern warfare, developments such as the Holocaust and the A-bomb were the not the tragedy of scientists, but the 'tragedy of mankind'.<sup>5</sup>

Today scientists can no longer generalise their faults and people are again wondering whether the natural, primitive way of life was not healthier, and why science, in the course of solving certain problems, creates so many unforeseen hazards. Where scientists previously showed unlimited faith in their ability to solve problems posed by nature, they are at a loss with the problems generated by science.

## **Natural Civilization: hunter gatherer**

Modern, technocratic people may scoff at the idea that the primitive, natural way of life is superior, but the fact that those cultures exist in equilibrium with the environment, causing it little or no damage, can not be overlooked.

Our western culture takes for granted the belief that nature is hostile and that human nature is inherently brutal if uneducated and uncivilized. There is plenty of evidence that this is often true. But there is also abundant evidence that hunter-gatherers are not barbaric, nor is their environment hostile<sup>6</sup>.

We assume that western civilisation represents the beginning of the orderly, constructive, peaceful way of life and the end of brutality and chaos. The division is not clear cut. Cruelty can be found in both modes, and so can pleasure.

It seems that it is more accurate to describe that phase in time which we identify as the beginning of civilization as the end of natural civilization and the beginning of artificial civilization.

Again, the book of Genesis is the most eloquent description of this transition. I believe that the Fall, the loss of innocence, the expulsion from Eden was the result of a very slow process of population growth and depletion of natural resources in the fertile crescent. It was not due to evil or human weakness, but because of a natural desire to find an explana-

tion, the devil, greed and lust were blamed, being more identifiable than the slow imperceptible changes in the environment and society.

This transition occurred in the same period as the development of agriculture. It was followed by the growth of early civilisations in Egypt, Mesopotamia, India and China between 3,000 and 1,000 BC and later by Hebrew, Greek and Roman civilization. Though the Hebrew bible was written in this period, the Garden of Eden stories were probably handed down over many generations, depicting the historic transition from hunting and gathering to agriculture and urbanism.

The pessimism and sense of loss in Hebrew and Sumerian records suggest that the loss of natural civilization was painful and disturbing.<sup>7</sup> The growth of civilization was therefore not only the discovery of new human capabilities but also the struggle to cope with the loss of a culture and way of life that had sustained homo sapiens for 40,000 years.

The most significant achievement of the natural civilization was without doubt the development of language. This remains humanity's most useful instrument, to which only writing and computers bear comparison, as products of our rational culture.

## **Artificial civilizations: agriculture, industries and urbanisation.**

Many of the developments of the early civilizations reflect positive and negative experience. Religion is often fatalistic, as are laws and literary works. Administration is cynical, especially in the despotic, imperial cultures. Mathematics and applied science emerge with agriculture, which was also aided by astronomy. The use of script emerges at this time and so does military strategy.

Mankind's efforts to improve conditions reflect a fear of his own nature and of the environment, as well as a determination to solve his problems. Most religions reflect a concern with fall and redemption.

With Plato and St Augustine there is a dramatic shift in human thinking, away from worldly concerns and towards spiritual, rationalistic ideals. This growth of rationalism is generally considered an advance in civilization, but it is more accurate to describe this trend as both a discovery of the rational mind and a refuge from the emotional problems resulting from real world scarcities. Plato himself recorded that Greece had earlier been forested and rich with wild life but by his time supported much less greenery and wild life.

The transition from hunting and gathering to agriculture is generally represented as a step up the ladder of civilization,

but this is usually the point of view of those with land, equipment and power over labour. The rift between the haves and have-nots begins with agriculture and the slave and peasant classes were rarely able to express their opinions.

We know that hunter-gatherer societies spent less time 'making a living' than farmworkers or industrialists and have fewer diseases. They were also able to rely on the environment to support them to a greater degree than farmers or industrialists, who are at the mercy of factors beyond their control.

The skeletal remains of farmworkers in the early phase of agriculture show that they spent much of their working lives on their knees, and had wrist and hand injuries. This was before grain was milled by wheel and reveal that the farmworker crushed grain using stones and slabs while kneeling. When large-scale industry arrived, new burdens were imposed on man and nature: population increase, migration, ill-health, and excessive physical labour were the human burden, while pollution and resource depletion have been nature's curse.

**Population increase and resource depletion:**

**Necessity is the mother of invention.**

The invention of the plough and the wheel allowed for intensive agricultural production. Land was no longer available for

habitation and people moved into the towns and cities. The invention of military strategy and equipment is related to a territorial approach to resources. Concepts of property ownership involved more possessiveness and aggression as agriculture advanced.

Because of the rejection of science and technology by the early Christian Church, there was little innovation until the age of Copernicus, Galileo and the Industrial Revolution. The emergence of a man-made industrial civilization took place on a vast scale and the population explosion began.<sup>8</sup>

### **Man-Made cultures and Nature: the parting of the ways.**

I have argued that humanity does not have one kind of civilization, but two: the natural and the artificial. There is a clear tendency for the two to diverge and for the man-made civilization to be apprehensive of nature, seeking always to control it.

That men were largely responsible for the intellectual and technical innovations is often described as due to the fact that women's roles were restricted to domestic matters and that education was denied to them. This is true to a large degree but there is more behind this fact than the conventional view of civilization allows us to see.

The theory of two civilization allows us to understand that men were more deeply affected, distressed even, by the transition from hunting and gathering to agriculture. Since men could no longer find fulfilment in hunting they indulged in the alternative pastimes of warfare, sports, philosophy, literature, politics and so on, avoiding the drudgery of farm labour

\* wherever possible. Womens' role in childbearing and caregiving <sup>did not disappear with</sup> remained after the transition to agriculture and has only <sup>greatly</sup> been altered during the current industrial phase.

The transition between natural and artificial lifestyles can be described as culture shock. My argument is that men have tried to deal with this emotional shock by rational means which often resemble obsession and frequently lead him away from natural reality. Much of contemporary intellectual life aims for a detached control of nature: science and technology are the tools which men, and more recently, women try to achieve this domination of humanity and the environment.

In my analysis of this syndrome, it follows that the greater the divergence between the human intellect and natural reality the greater will be the ignorance <sup>about</sup> and abuse of nature. Since humanity is a small product of nature, he can by definition not control nature. To believe that he can is a delusion. Therefore, the greater the abuse of nature, the greater the reaction by nature.

If it is true that intellectual cultures tend to drift away from natural factors, it is inevitable that the products of intellectual culture will be potentially damaging to nature, both human and environmental.

### **Escape from nature: ignorance is bliss.**

*and Syracusans*  
When the finest strategists in ancient Athens, Pericles and Alcibiades, led their city-state to defeat at the hands of the Spartans, their civilization went into decline. A plague decimated the besieged Athenian population, including Pericles, their imperial general. Later, Plato encouraged the people to turn their attention to spiritual and moral idealism, and away from the misery of real life.

When Rome fell, St Augustine followed Plato's inspiration and developed the other-worldly Christianity which was to characterise European thinking for a thousand years. In this period scientific investigation was carried out by the Arabians, mostly in the fields of astronomy, medicine and chemistry.

When science returned to Europe, it came with a vengeance. The rationalism of Scholastic Christianity had paved the way for the empiricism of men like Bacon and Galileo.

The scientific and Industrial revolutions that followed brought to an end the richly imaginative culture which we associate with Leonardo da Vinci, Shakespeare, Gothic

cathedrals and Beethoven. Their culture was one of faith, hope, charity and imagination, a delight to the spirit, but not one which offered any conceptual defence against Darwin, 'dark satanic mills' and the survival of the fittest.

**Scientific realism versus natural reality:  
tragic conflict.**

The Christian Age of Faith had forbidden scientific investigation but when it was revived, it was inspired by a will to control, dominate and exploit nature. That sense of proportion between man, his creations and nature which had characterised so much of Greek and Roman culture was absent from the world of Isaac Newton and Descartes.

When Bacon, in the early 17th century encouraged people to dominate nature like a slave, he found many supporters.<sup>8</sup> The triumphant spirit of science is still alive over 300 years later as we see from Bronowski's words:

"Physics in the 20th century is an immortal work. The human imagination working communally has produced no monuments equal to it, not the pyramids, not the Iliad, not the ballads, not the cathedrals."<sup>9</sup>

The separation of man from nature has been a feature of science, religion and philosophy. The central theme of this *my* study is that when the human mind deviates too far from its

natural beginnings, nature may be injured in the process, and may react in ways that can not be anticipated.

We believe that rationalism is a guarantee of sanity and order. This may be true but excessive rationalism does not create additional order and sanity. Just as with excessive emotionalism, disorder and chaos can result from too much intellectualism. This is because obsessive concentration on logic, calculation and technical details can make one oblivious of the <sup>greater</sup> permanent relationship that exists between the laboratory, the human agent, and natural reality. The human is the permanent link, but when we divorce nature from knowledge, we dispossess ourselves of both worlds. The result is insanity.

For true, comprehensive empiricism to survive, a clear relationship should be maintained between experiment and <sup>natural</sup> reality. Logic and rationalism do not automatically lead to realism and for technocrats to insist that logical reason is the only reality, and that anything else is a romantic delusion, is an error.

It is clear from the disappearance of life from lakes and streams, of the ozone layer, from climate instability, from the increase in cancer, that catastrophe will result when scientists and politicians, oblivious of the long term effects, abuse nature for short term gains. There is no doubt that the doctrine

of the survival of the fittest, the holocaust and Hiroshima fall into ~~this sphere~~ <sup>the modern phase</sup> of tragic human activity.

### **Nature strikes back: ignorance and tragedy**

When humans carry out scientific and industrial activity without regard to its effect on nature, it is certain that nature will show the damage eventually. Any society which has overexploited its natural resources, has eventually lost its Garden of Eden.

It seems certain that human culture has a tendency, under stress of economic and social insecurity, or of culture shock, to react by becoming severely disciplinarian, in the hope that strictness and planning will prevent future problems. When we deviate too far from natural reality through excessive organisation or repression, human nature revolts, but the environment dies away.

Politicians can respond violently to revolutions, but what do they do about the ozone layer, or the greenhouse effect?

What is it about our species that fears and tries to dominate natural reality?

It seems that the structure of our brains gives the explanation.

Our neocortex, the most highly evolved part of the brain consists of two hemispheres, the left which is concerned

IF A REPRESENTATION OF BRAIN HEMISPHERE FUNCTIONS IS SUPER-IMPOSED ON A GRAPH OF THE PROGRESS OF NATURAL AND ARTIFICIAL CIVILIZATIONS, THERE IS A CLEAR RELATIONSHIP BETWEEN MAN-MADE CULTURE AND THE RATIONAL HEMISPHERE, AND BETWEEN NATURAL CULTURE AND THE INTUITIVE, HOLISTIC HEMISPHERE.

BRAIN HEMISPHERES<sup>12</sup>

LEFT

RIGHT

VERBAL  
ANALYTIC  
SYMBOLIC

NONVERBAL  
SYNTHETIC  
CONCRETE

ABSTRACT  
SEQUENTIAL

ANALOGIC

RATIONAL  
DIGITAL

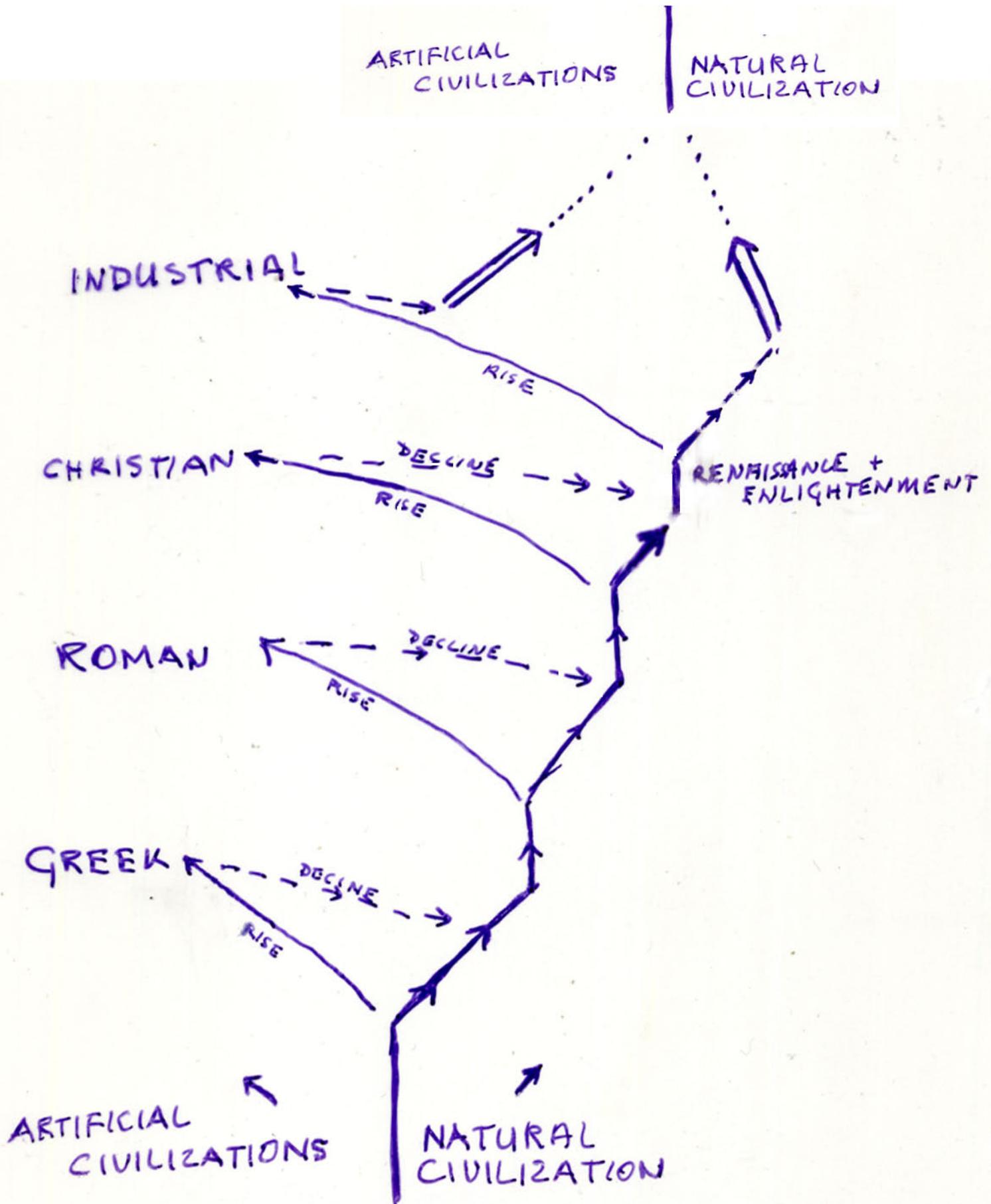
NON RATIONAL  
SPATIAL

LOGICAL

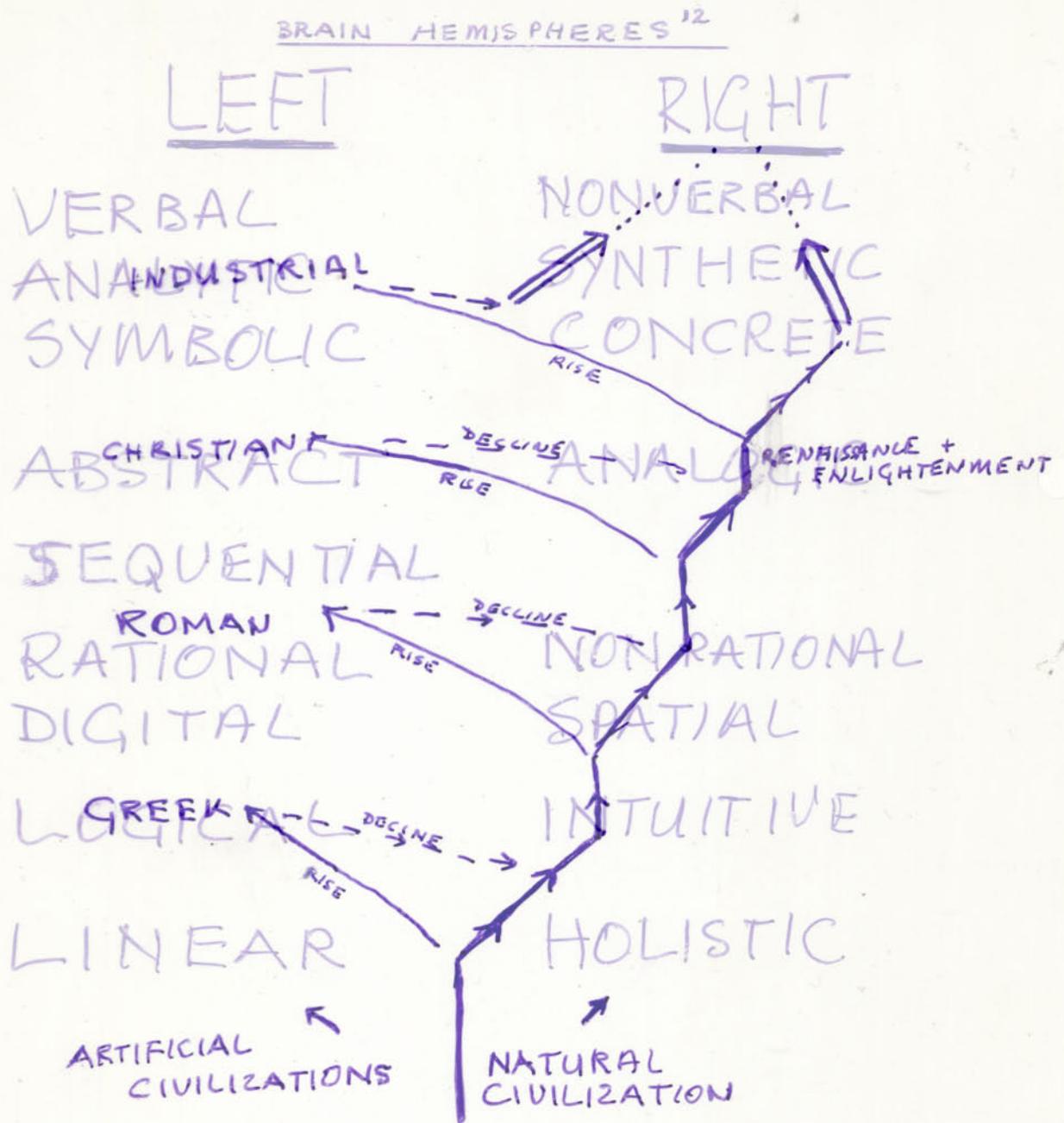
INTUITIVE

LINEAR

HOLISTIC



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mostly with speech, logic, sequence, numbers and rationalism, and the right, which processes spatial input, patterns, creativity, sensory and emotional stimuli. The two hemispheres are connected by a relatively small cable of nerve fibres.<sup>10</sup>

In the developed nations, educational and social pressures force some people to develop their intellectual abilities. Others, including the poor, women, certain racial and religious groups and artists have received limited educational opportunities in industrial times.

The intellectual culture considers the other groups to be undeveloped and backward. This is reflected in the higher status and pay for the educated, or by social and economic discrimination against the other groups. In the literature of neurological research, the verbal, left-brain hemisphere is often referred to as dominant, or major.

In fact, an unbiased study of this area of brain research reveals that the non-intellectual hemisphere is more extensively connected to the rest of the brain and nervous system and may thus play a greater role in human functioning.<sup>11</sup>

The division between the two hemispheres and their functions bears a strong resemblance to the division between artificial and natural culture, with the technical, intellectual culture being largely a product of the left brain and artistic, emo-

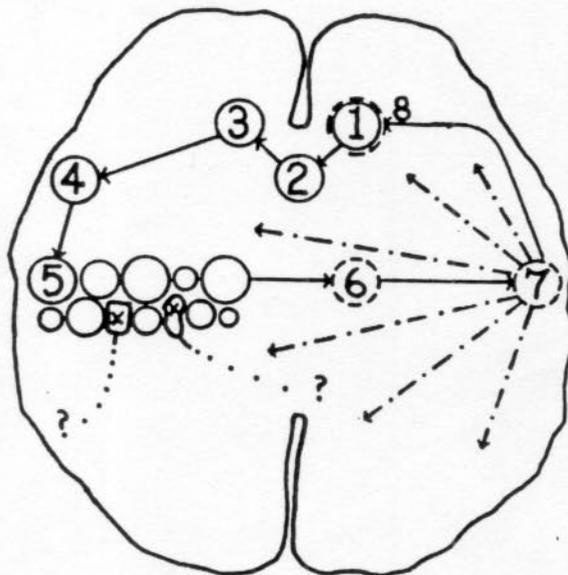
# A BRAIN MODEL

MORE  
LEFT

RELATIVE DEGREE OF ACTIVITY\*  
for the contrasting  
MODES OF MENTAL FUNCTIONING\*

MORE  
RIGHT

- a. linear
- b. sequential
- c. logical
- d. analytical
- e. verbal
- f. fragmenting
- g. differentiating
- h. convergence: seeks closure
- i. denotation
- j. commonplace signs
- k. conventional symbols
- l. facts: objective, impersonal, confirmable
- m. precision, clarity
- n. explicit
- o. sympathy
- p. Scientific Empiricism/Logical Positivism/certitude/surety



- a. circular
- b. simultaneous
- c. a-logical; paradoxical
- d. synergic; synthesizing
- e. nondiscursive; preverbal
- f. combinative
- g. dedifferentiating; holistic
- h. divergence: content with openendedness
- i. connotation
- j. expressive gestures
- k. art symbols; metaphor
- l. feelings: subjective, personal, judgmental
- m. diffuse, vague
- n. tacit; implicit
- o. empathy
- p. Immanence/Introspectionism/Intuitionism/Intuitive Cognition/indwelling/insight/intuition

\*Placement of numbers in hemispheric locations reflects the relative degree of functional activity or responsibility of the hemisphere (and its special modes of activity), and NOT the actual physical or anatomical location of the activity or quality in question.

① **Initial gestalt perception:**  
Picks out, distinguishes the 'figure' via *pattern perceiving acuity* of right hemisphere

② Shared through the *corpus callosum* with the left hemisphere; i.e., it 'reports' its 'findings' in response to cognitive cues given by the left hemisphere

③ Consciously *differentiated* attention; i.e., awareness only of the 'figure'

④ Becomes increasingly so differentiated:  
a. Seems more distinct, separate, or noticeable; reductionism, atomism; conception

b. Can be labelled, described, or categorized: filtered (in terms of existing concepts) and sorted (e.g., good—bad)

c. Highly mediated: separate covert/mental acts; takes time; i.e., thinking

d. Is highly attentive, arousing: strongly grabs attention

e. Tunnel vision

⑤ **Reinforcement opportunities:**  
a. Practice  
b. Analysis  
c. Use  
d. Assimilation or accommodation of similar yet different instances (transfer of learning)—the "x" occasions = no 'fit,' no understanding; rejected and possibly lost

⑥ Normalization; cognitive appraisal\*\*

⑦ Becomes increasingly normalized:  
a. Is conditioned by simultaneous (inter-) relationships interdependence; or involves interactive synthesis/synergy with other mental patterns/products (some of which are 'in memory' throughout the entire brain, others of which are happening at the same time); *subception*

b. Seems too vague or complex to be easily labelled, described (except by some form of metaphor; art)

c. Becomes more instantaneous, arises more quickly, or is seemingly spontaneous (i.e., not mediated)

d. Seems more 'normal'; natural (i.e., is *normalized*), even casual

e. Insight, intuition, empathy

\*\*Cognitive appraisal—where existing attitudes, biases, and values are applied by right hemisphere (subception) in a seemingly spontaneous way; seems like 'common sense' and 'feels' true beyond the need for more in-depth thought and analysis.

⑧ Holistic perception (understanding, 'appreciation') where the 'figure' is perceived within (or in terms of) its 'ground'—i.e., the background, the surrounding or conditioning holistic context that 'colors' or gives *meaning* to the 'figure' (largely via 7 a.-e.).

tional and sensory experience being the domain of the right hemisphere.<sup>12</sup>

The issue is complicated by the fact that language is the product of both hemispheres, and researchers believe that problem solving abilities are located in the right, non-intellectual hemisphere along with intuition and holistic thinking.<sup>13</sup>

### **More science? fuel to the fire...**

Left and right brain research might explain why, as technical culture becomes more specialised and rigorous, it attempts to solve problems of nature and technology in the same way: through analysis of the problem, with the assumption that solutions will automatically follow. However, the exponential growth of scientific research, along with the diminishing number of inspired solutions, suggests that the exclusively intellectual approach, although rational, is in fact counter productive.

It also suggests that the intellectual approach has a limited ability to comprehend the totality of man-made and natural reality. This approach is characterised by an escalating quantity of technical treatments of man-made problems and situations, creating a technocratic burden that results in new problems, such as funding shortages for research, technical incompetence as in the American space program and environ-

mental mysteries such as nuclear waste disposal. This situation is the progress trap.

From these facts it is reasonable to infer that the mind's problem solving abilities tend to atrophy in an excessively technical environment, and to hypothesise that a revival and enrichment of right-brain abilities is necessary before problem solving skills can be recovered.

### **Back to Nature? More escapism.**

The conclusions I have come to are useful in persuading educators and official custodians of culture that a regeneration of natural, humanistic culture and experience would not be an unrealistic, romantic fantasy. On the contrary, it is our only realistic hope for preventing technical society from collapsing under its own weight. It is the only way out of the progress trap.

The object of a 'back to nature' movement should not be allowed to become what it so often is, a form of escape. We see that if humanity is not busy escaping from nature, it is busy escaping from its own systems. This must stop.

When we renew our natural, humanistic culture, it must be with the purpose of 'recharging our mental batteries', so that we have the ability to solve the problems we have created. We must not seek an escape from the problems of tech-

nocracy, nor will we succeed by intensifying analysis and research.

**A re-engagement of science and nature: yin, yang, and the tree of life.**

The concept of the purity of science should be abandoned. Science is not cleaner or more pure according to its degree of detachment from the real world: it is more dangerous. Formulas and chemicals which are produced in laboratories, in glorious isolation from nature, are likely to do damage, as  $E=mc^2$ , chlorofluorocarbons and polychlorinated biphenyls attest.

The re-engagement of rational with natural experience will help ensure that the inventions of science are real life necessities, not intellectual fantasies. It is clear that logic does not guarantee realism and that if a little knowlege is dangerous, a lot of knowledge is very dangerous. However it is also evident that the prediction in Genesis that man will eat of the tree of knowlege in sorrow, all the days of his life, may have been too pessimistic.

It seems that we can return to the Garden of Eden, and we must, at least when we are not working, in order to get the inspiration we need to solve the problems we have created and to remind ourselves that we are products of nature,

capable of beauty and ugliness. If we banish ourselves from Eden forever, we will forget the beauty.

The concept of yin and yang that is found in eastern civilizations is closer to this idea of a balance between science and nature than the western dualistic tradition. Though today's technical advances are founded in ideas which originated in the west they have been greatly enhanced in the east, so successfully that the west is in danger of stagnating through loss of motivation and reward, and through inferior production.

**Conclusion: avoiding the boom and bust cycle in western civilizations.**

It is accurate to conclude that, based on the evidence I have assembled, that industrialised society will decline, through overconcentration on systems and technicalities in much the same way as Greek, Roman and Renaissance civilization did in earlier times.

When intellectual culture deviates from natural and human norms to the point where oblivion sets in then nature will reassert itself. Human nature rebels against repression by revolting against the oppressor, by victimising a weaker scapegoat or by abandoning unmanageable political and economic structures.

*add -  
The environment responds with phenomena such as global warming and ozone depletion.*

When western society responds to political and economic problems with research, analysis and ruthless efficiency the

expected solutions may not materialise. When it shows that it is oblivious to human and environmental problems, we wonder how long <sup>nature</sup> fate will be tempted. Socialist ideologies may have fallen on hard times, but the ability of the environment and humanity to sustain capitalist economies at their present levels of exploitation is also in doubt. <sup>to reassert itself</sup>

Since industrial economies are the only form of human survival since hunting and gathering that shows an ability to eventually achieve population equilibrium, it is essential that humanity and the environment are not exhausted of their potential.

Environmentally friendly industries must be devised. This can only be achieved by allowing humanity to recharge its batteries as often as possible through cultural, sensory, educational and physical enrichment, so that mankind can find the inspiration to find forms of industry which do not degrade the planet and overburden society.

These forms of renewal will have the added benefit of enabling humanity to achieve a good quality of life without excessive reliance on material wealth, which can only be acquired at the expense of the environment and of other people.<sup>14</sup>

The main themes of this essay can be summarised as follows:

1. The industrialized nations are over-dependant on material goods and possessions, and on science and technology;
2. Where scientific, technological culture does not relate closely to human and environmental realities, the latter are often harmed by irresponsible innovation;
3. Intellectual, commercial and religious cultures must be discouraged from expressing contempt for human and environmental nature;
4. Research shows that cultural enrichment will result in better problem solving skills, therefore the scientific community must be prevented from neglecting the humanities in education;
5. An investment by society in arts, in spiritual and cultural health and wellbeing will lower materialistic demands and raise the quality of its scientific endeavours, a vital necessity if technology is to be made less greedy of resources, and less harmful;
6. Positive thought and action should replace cynicism and pessimism.

## Notes

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