

SYNAPSIA

The international Brain Club journal

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**Ned Herrman on
Brain Dominance**

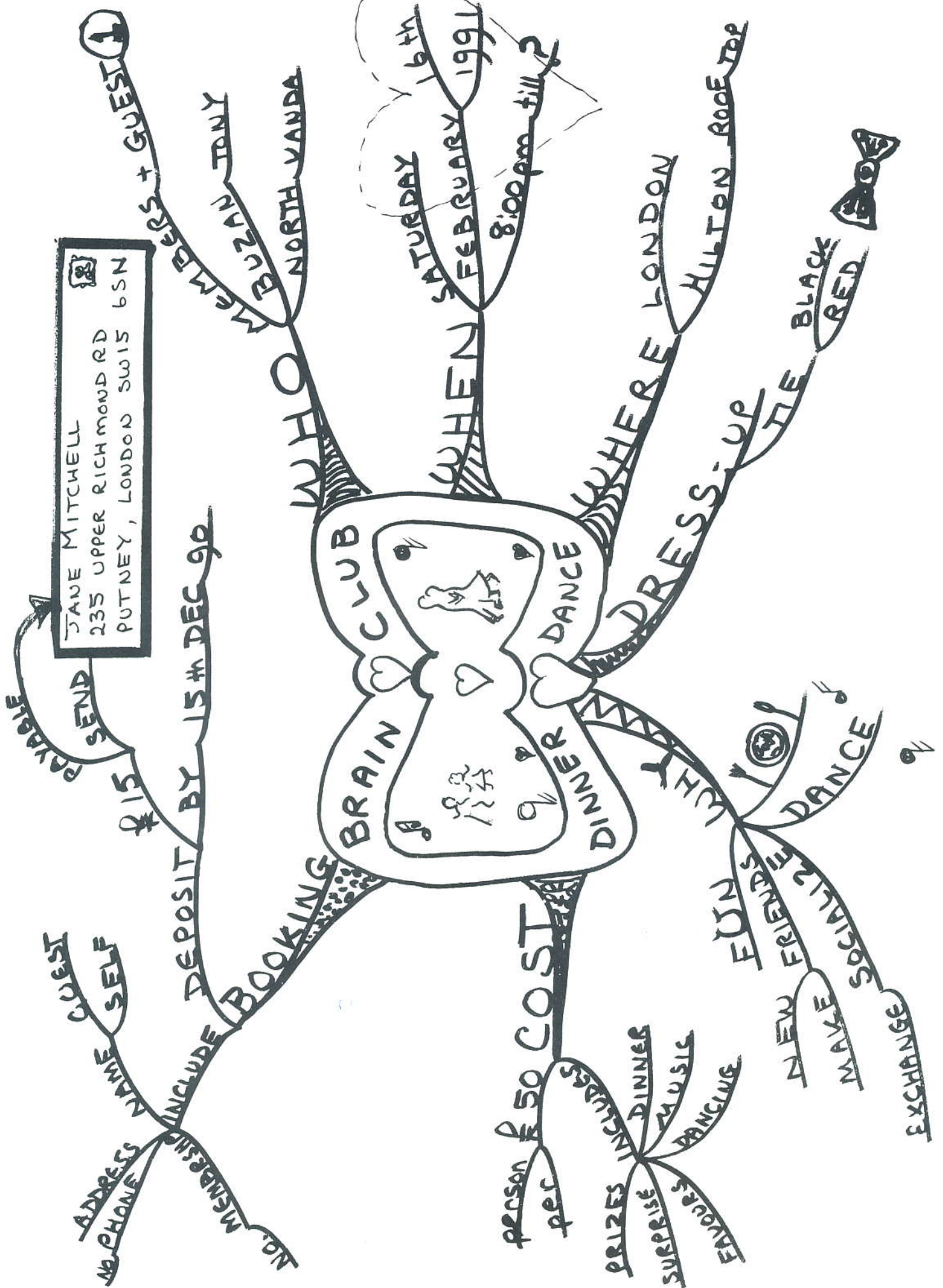
**Body and Soul
Mind Map Art**

**Lorraine Gill discusses
Romantic Artists**

Mental World Records

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235 UPPER RICHMOND RD
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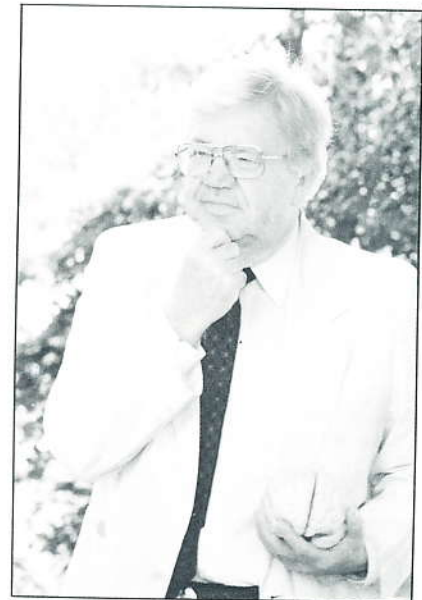
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Well, What Do You Expect at Your Age...

The older, the better! Jean Buzan

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21st February 1995
Did Nostradamos predict
this one?



FROM DUALITY TO QUADRALITY

Ned Herrman on Brain Dominance

EDITORIAL

A 'left/right brain' theory has been increasingly in the public eye since Roger Sperry's ground-breaking experiments and revelations of the late 1960s and early 1970s.

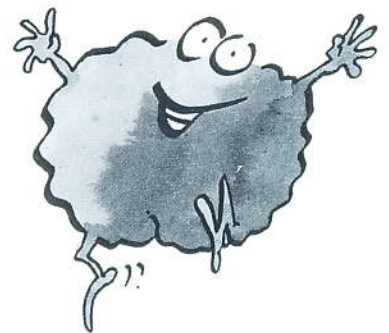
With the Summer issue *Synapsia* explores the new frontiers of this field with a feature by Dr. Ned Herrmann, the Father of Brain Dominance Questionnaire Testing Instruments. At the same time we celebrate the fact that Dr. Herrmann has become a member of the Brain Club. In a wide ranging article, Dr. Herrmann, a Renaissance individual, entertainingly explores his own self-development, and then takes Brain Club members on a guided tour of their own brain dominance personality profiles.

Synapsia also welcomes as a new member to the Brain Club Professor Michael Crawford, the author of the revolutionary new book on evolution: *The Driving Force*.

Professor Crawford is a leading authority on nutrition and its effect on the developing brain of the embryo and child, and is a particularly noted authority on animal intelligence. Professor Crawford has kindly contributed a response to Mowgli on the intelligence of dolphins, and our intelligence in dealing with **that** intelligence!

Following the trend towards a greater appreciation of art and its importance in the development of the brain and intelligence, as initiated by John Naisbitt in the last issue, and emphasised by Dr. Ned Herrmann in this, we feature an article by Lorraine Gill. Lorraine Gill is hailed by many as the artist who will lead the art world into the twenty first century. *Synapsia* welcomes her as a new Brain Club member, and knows that readers will enjoy her witty essay on the popular myths and actual realities surrounding the artist and her work.

Back issues of *Synapsia* are available from The Brain Club, c/o The Buzan Centre Ltd, Suite 2, Cardigan House, 37 Waterloo Road, Winton, Bournemouth, Dorset BH9 1BD. Send cheques for £3.00 per copy made out to The Brain Club.



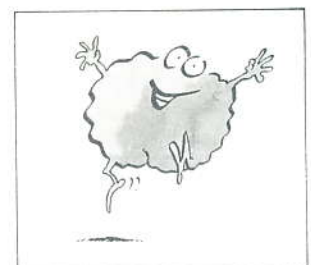
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The term and concept Mind Map™ referred to in this publication is copyright by Tony Buzan.
Pécub, the world's fastest brain cartoonist, is happy to provide cartoons based on your ideas and requests.

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From Duality to Quadrality:

Ned Herrmann's Development of the Whole Brain Model



By Ned Herrmann

Ned Herrmann, author of *The Creative Brain*, father of Brain Dominance Testing Profiles, and Renaissance Man talks about his own life, and helps Brain Club Members in their own self-development.

I first experienced my own duality 55 years ago while in high school. I excelled at science and math, was terrible at languages, particularly foreign language, but did well in communicating in other ways such as signing and acting. It seemed I was smart and dumb at the same time.

Because I was good at science and math, I decided to major in chemical engineering in college, and to pursue my musical and performing interests as recreation. It didn't take long for me to discover that while I was smart in science I really hated chemical engineering. I found it difficult, boring, and totally unfulfilling.

However, there was one required course which I thoroughly enjoyed. It was fascinating, fun, and effortless. The course was freshman physics. I was flunking chemical engineering, but getting A+'s in physics. I began to drop the chemical engineering courses replacing them with courses in physics and math, and I began to take elective courses in music.

The campus of Cornell University is very large, and the different schools had their buildings clustered in different parts of the campus. As I walked back and forth between the engineering school, the physics school, and the music school I noticed the differ-

ence in dress, the differences in hair style, the difference in books and papers, and the differences in the architecture of the buildings. I also noticed the differences in the numbers of female students in physics and particularly music compared with chemical engineering. As I recall, there were no females in chemical engineering. There were a few in physics, and there were many in music. As I moved further from the highly structured, detailed, analytic, and procedural nature of chemical engineering to the conceptual, experimental nature of physics, I was moving from know-how to know-why. For the first time in college I



began to feel smart, I began to feel successful as a learner. I began to enjoy being a student.

My musical capability was also developing, and as my college program evolved I eventually majored in both physics and music. As one of the featured soloists of Cornell's Glee Club, I had the opportunity to perform in many major music halls including Carnegie Hall in New York, and the original Carnegie Hall in Pittsburgh. While I was writing my senior thesis on "The Origin of the Craters of the Moon", I had the opportunity to audition for the Metropolitan Opera. My duality had reached the point of being the basis of a major life decision. What career path should I pursue?

I chose physics as my vocation and music as my avocation. After graduating, I became the first young physicist in General Electric's development engineering laboratory and within a week of joining GE I became a member of the Schenectady Light Opera Company singing one of the leads in "Robin Hood". Thus began a thirty-five year career with General Electric, during which I progressed from my initial role as a scientist through many assignments and locations to the position of Manager of Management Education at GE's Management Development Institute in Crotonville, New York. In parallel with this work career, I enjoyed a

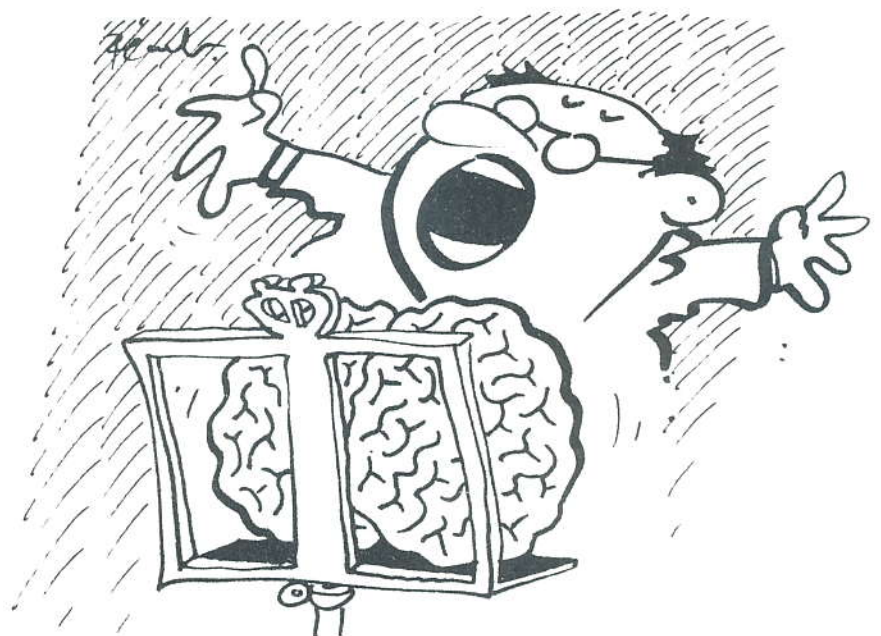
very active life as a singer and actor in regional productions including the early experimental television station WRGB which was the first in the U.S.A.

I had sung in choirs for most of my life, and in my late thirties I began to experience black-outs that seemed induced by my singing. The frequency of these black-outs increased to the point where they would occur not only while I was singing, but also throughout my working day. I kept a record of over two thousand black-outs, but long before reaching that number, I felt it necessary to stop

singing and performing. The deficit that this created in my life was so profound that I sought a replacement for the performing part of my life.

Since at this time I was physically limited due to the black-out problem, I chose something that I had always wanted to do, but I had always felt dumb at, but which from a physical stand-point fitted my situation. This was painting. Starting with a \$5 paint set, I self developed a capability to paint over 600 paintings of which over 400 have been sold to private and corporate collectors. A few years after starting painting, my wife Margy urged me to try my hand at sculpting. The dozens of sculptures that I created over the years became the highlight of my artistic career.

It was at age 53 during the period of my greatest artistic production that my obsession with creativity really began. I began to look at myself with a "third eye". I was painting a picture a week and creating a new sculpture every month or so, and I needed to know where this came from. As program chairman of our local art association I proposed that we convene a panel on the nature and source of creativity. To prepare myself for the role of panel moderator, I went to the Stamford library to research the subject. Within half an hour I experienced an enormous "AH-HA". Creativity came from the brain! None of the books I examined said that in so many words, but the inference was clear. If creativity came from the brain, then of course learning was also mental. These things are now obvious, but back in 1975 these conclusions were not written about or talked about. In fact, I was con-





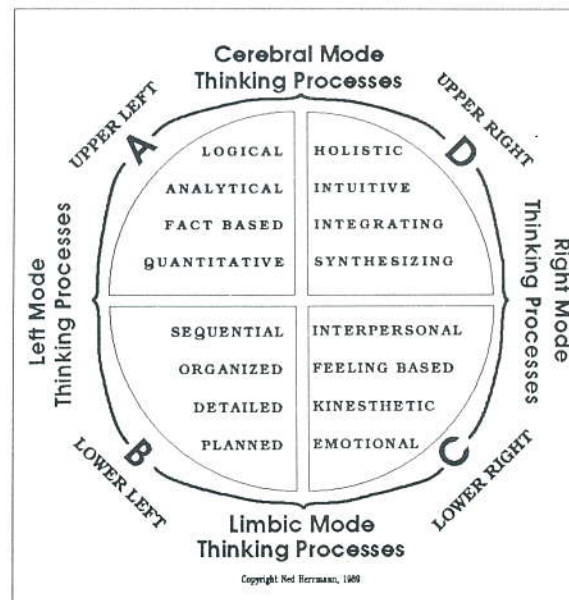
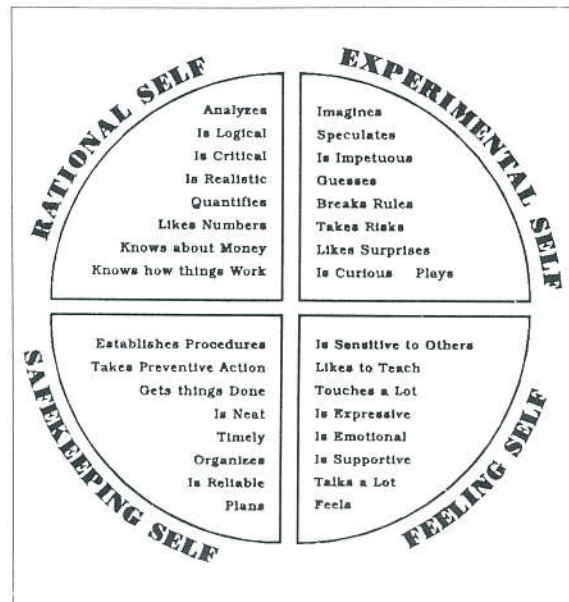
sidered a little crazy to have reached this conclusion and blasphemous to have talked about the brain in public – and certainly not on company property – after all the brain had nothing to do with management. Only twelve years later, in July of 1989, the US Congress passed public law 101-58 which declared the 1990s as the Decade of the Brain. In his proclamation, President Bush encouraged all government workers and the public in general to conduct programs in support of the public law.

Since at the time of my “AH-HA”, I was head of Management Education at GE, I was in a position of sufficient freedom and authority to conduct experiments on the application of the emerging new knowledge of specialized brain function as applied to teaching and learning. Everything that I tried worked! Even the simplest of brain related activities seemed to improve the design and delivery of our standard seminars and workshops. Primary among these was respecting individual differences between the learners in my sessions. Five years earlier I had conceived the idea of adding “course enrichers” into the typically homogeneous participant groups attending our management workshops. These so called course enrichers typically came not only from outside GE, but also from different backgrounds and occupations. They were professional artists, ministers, retail business people, newspaper reporters, and a wide variety of similar local people. In every instance, their different backgrounds, experiences, and what I later learned to be their different brain dominance characteristics, brought a stimulating and heightened sense of interest to the learning environment. Based on this successful past experience, I now began to be more precise in identifying course enrichers within the company, and by changing our course enrolment procedures began to attract a more heterogeneous group of participants.

But, I longed for a more reliable way of measuring individual differences so that the selection process could be more rigorous and the results more predictable.

As my personal research evolved and I began to create a body of knowledge and understanding about brain function and particularly brain dominance, I invited people to come to a series of “brain update” seminars in which I would share my new understanding in an experiential workshop setting. In order to learn more about the participants in these brain update workshops, I devised a questionnaire that I later learned revealed a number of clues as to the individual’s brain dominance preferences. Over the course of several years and many thousands of participants, these questions were further refined and through validation studies became the basis of the Herrmann Brain Dominance Instrument.

THE FOUR SELVES MODEL



THE WHOLE BRAIN MODEL

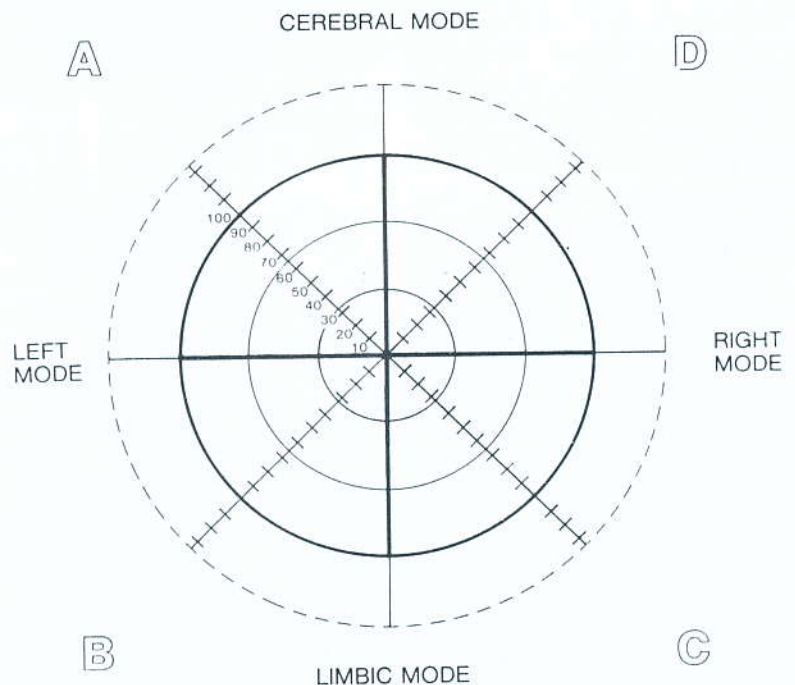
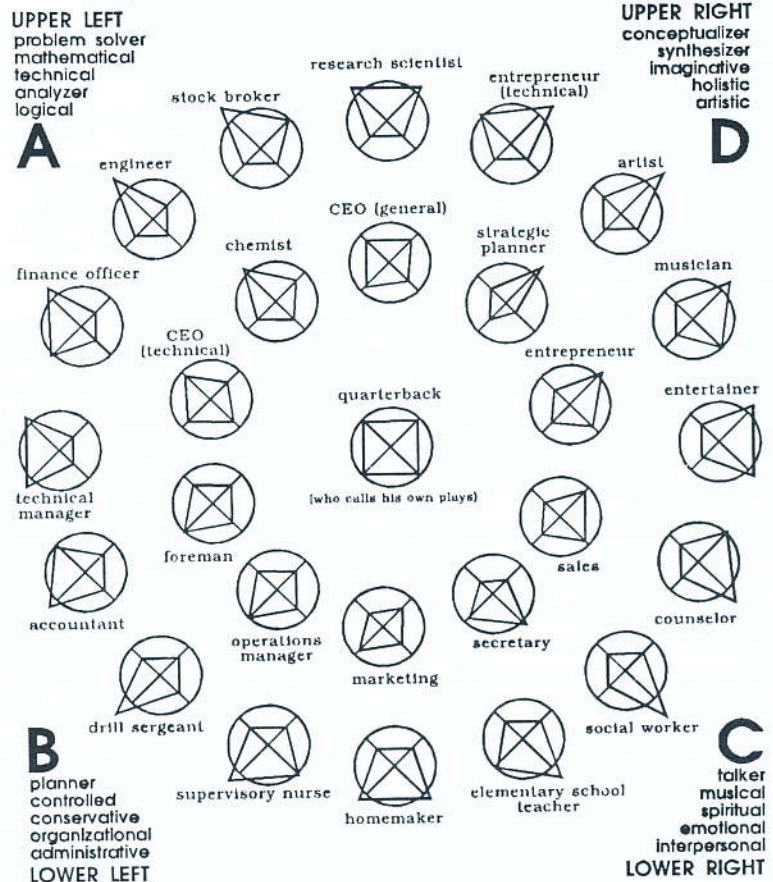
Before I understood the potential of the questionnaire as a possible instrument, my research focus was on the application of EEG measurements of individuals in various learning situations. Through a series of tests conducted in Berkeley, California I was able to demonstrate left and right brain differentiation in EEG response to a variety of experiential situations, but I concluded that "wiring" people up was not an available strategy for my management education application. I needed something that was simple, reliable, and did not require individual physiological testing.

After four years of experimentation and research, the Herrmann Brain Dominance Instrument was created to meet this need. It is a paper and pencil inventory of personal questions, the responses to which reveal the person's mental preferences across the full range of possibilities. The resulting profile represents the individual's distribution of preferences in the four quadrants that represent the whole brain model upon which the instrument is based. The whole brain model represents a metaphor of how the brain works. From it can be derived another metaphoric model - that of the four selves. I have concluded that we are not single individuals, but rather a coalition of the four selves. The profile resulting from answering the 120 questions of the Herrmann Brain Dominance Instrument is a visual metaphor of this coalition.

As of this date well over 1,000,000 people throughout the world have completed the HBDI. From these results, an extensive data base has been established from which occupational norms can be derived. If we think about the mental requirements to perform certain tasks and then think of a job as an array of those tasks, it is possible to gain an understanding of the mentality of discrete jobs. It is my belief that individuals gravitate towards work which allows them to be smart, successful, and fulfilled. I believe the opposite is also true, that they tend to shy away from work in which they are dumb, failures, and bored.

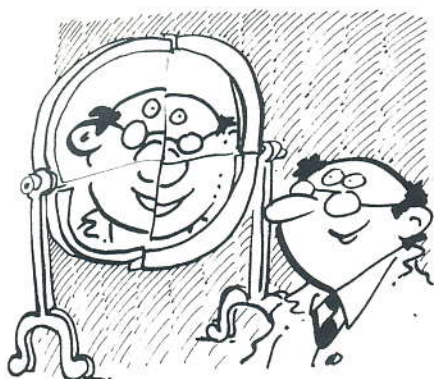
The same can be said for educational courses. When there is a gross mismatch between our coalition of preferences and the mentality of the educational offering, then we will likely find that subject very difficult and the learning process unrewarding. Such was the case of my experience

Representative Brain Dominance Profiles



© 1986, Ned Herrmann

with chemical engineering. Physics, on the other hand, has a different set of mental requirements which proved to be a much better match with my own mental preferences. So I was dumb in chemistry and found it difficult, and I was smart in physics and found it easy.



I can still recall the humiliation I felt 50 years ago when my supervisor in the chemistry lab I worked in as a student one summer, sent me around to the other departments to get a "benzine ring". At first, I was too slow to pick up on the smiles and outright laughter that my inquiry produced. It was only after the fifth visit in the laboratory that I was mercifully taken aside and told that a benzine ring was not a piece of laboratory equipment, but rather a chemical formula! The trick had been pulled on many "dumb" kids before me. Unfortunately, some people go through life never quite understanding the work that they're doing and thus miss out on the rewards of a fulfilling job.

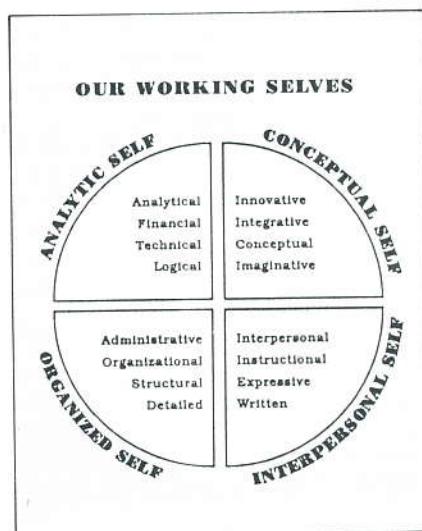
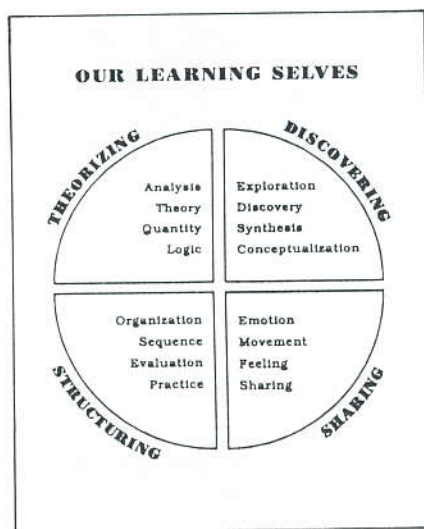
In contrast, in my first month on the job as a physicist in GE, I invented a solution to a problem that the engineers on that project had struggled with for over a year. The solution was simple, obvious, and easy.

If the readers of this article will look at the three illustrations provided, I believe they can sketch in a rough profile of their preferences on the blank profile grid provided. First, examine the four selves model, and get a sense of your own preferences and lack of preferences in each of the four quadrants. In like manner, now turn to the whole brain model and review these descriptors for your preferences and lack of preferences in each of the four quadrants. Turn next to the array of representative occupational profiles, and look for matches and mismatches between your own emerging personal profile of preferences and lack of preferences.

Finally, attempt to sketch in a first approximation of your own profile in the blank provided.

Having done so, now reflect on your educational successes and failures and the variations throughout your work career – where you were smart and dumb, successful or unsuccessful, or found these easy or hard.

As these brain oriented understandings have developed over the years, so has our ability to devise teaching and learning methods which solve some of the student mismatch problems through improved educational techniques. Tony Buzan's Mind Mapping is a world class example, and there are numerous others under the general heading of Applied Creative Teaching and Learning, which apply whole brain theories to the design and delivery of education. In like manner, these whole brain concepts can be applied to the design of work and the matching of individual preferences and competencies to that work not only to the improvement of productivity, but also the increase of personal fulfillment on the job.



Many famous people throughout history are examples of individuals who have been exquisitely matched with the work that they did. I would speculate that their brain dominance led to a coalition of preferences which in turn led to their pursuit of their life's work. Before looking at my examples, reflect for a moment on ones that come to your mind. See if you can identify examples in all four quadrants of the whole brain model. Since over 90% of our database have preferences in two or more quadrants, also see if you can identify examples of left mode, right mode, cerebral mode, limbic mode, or all four.

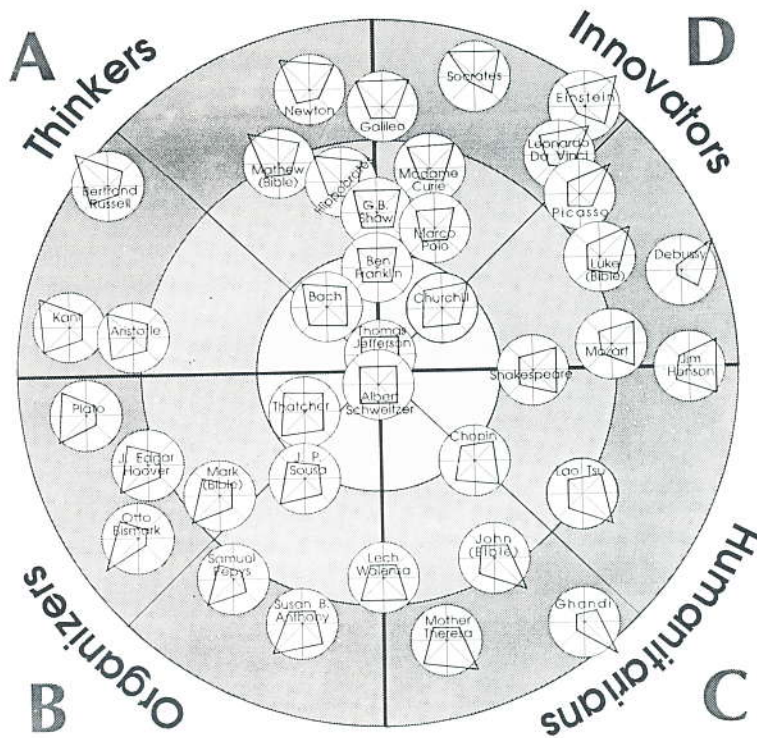
Here is an array of my guesstimates of some famous people throughout history. Examples will include Hippocrates, Galileo, Einstein, Mother Theresa, J. Edgar Hoover, Margaret Thatcher, Isaac Newton, Jim Henson, Benjamin Franklin, Thomas Jefferson, and Doctor Schweitzer.

In closing, I would like to offer some personal conclusions based on 15 years of research, development, and experience applying the Herrmann Brain Dominance Instrument and the whole brain model. While I'm not in a position to offer irrefutable scientific proof of each of these strong opinions, I do feel that each is supported by overwhelming evidence:

- The brain is unique, specialized, situational, interconnected, iterative, dominant, and whole.
- The world is a composite whole brain.
- Dominance is natural and normal.
- Handedness is not a determinant of mental dominance.
- Dominance occurs between four specialized structures, not two.
- We are not single individuals... We are a coalition.
- A metaphor for this coalition is the four selves.
- I believe that we are more the product of nurture than nature, and feel that we should hold that assumption as we apply the HBDI.
- We are to a substantial extent in charge of our own mental process.
- The architecture of the brain consists of four interconnected clusters of specialized mental processing modes – A, B, C, D – that

Great Brains in History

Herrmann Brain Dominance Proforma Profiles



© 1990 Ned Herrmann

function together situationally and iteratively, making up a whole brain in which one or more parts becomes naturally dominant.

- I believe the basis of this architecture to be an organizing principle.
- The whole brain model derived from this organizing principle is an appropriate metaphor for how the brain works.
- The power and influence of the four different quadrants and the four different modes is equal.
- The mind is what the brain does.
- Dominance leads to preference which leads to competence.
- Preference and competence, while strongly linked, are different things.
- Preferences and avoidances are of equal importance.
- No matter what your brain dominance is – the degree of “wholeness” of your mental process, is the degree to which you are situational.
- The HBDI has been proved to be a valid and reliable assessment tool to quantify an individual’s mental preferences.
- Everyone has at least one primary.
- Over 90% of our database is multi-dominant.
- Behaviors resulting from preferences are to a large degree predictable.
- Opposites attract.

- Male/female mental differences are located primarily in the A/C quadrants. They seem to be consistent across cultural boundaries, and are real.

- Many occupational norms cross cultural boundaries i.e., Chemists, bookkeepers, nurses, commercial pilots, etc., because the work is the same.

- Individuals with similar preferences tend to communicate more easily with each other even across cultural differences.

- It is physiologically unlikely that all four quadrants are not somehow involved in a person’s mental response to a given situation.

- On the other hand, it is quite likely that we don’t pay attention to the specialized thinking that takes place in each quadrant.

- Behaviors can change as a result of changes in thinking.

- For many, a value shift must take place before a change of thinking can occur.

- Thinking styles and learning styles represent a composite whole brain world.

- Learning is mental.

- The limbic system is the site of memory transformation in both the storage and retrieval modes and therefore is essential to the learning process.

- Whole brain teaching and learning approaches respond successfully to learning style differences.

- Learning is not age dependent when using whole brain design and delivery approaches.

- It is likely that each individual has at least one island of brilliance.

- Things that we are now doing that work well, such as teaching, managing, creating are likely, when diagnosed, to be whole-brained.

- Achieving affirmation through experiential learning is a key strategy for accessing mental modes not currently used.

- Composite whole brain learning groups represent the ultimate teaching and learning configuration.

- Whole brain designs require whole brain evaluation.

- The whole brain model can be reversed, and applied as a diagnostic tool.
- The resulting proforma profiles can clarify issues difficult to describe in conventional terms i.e., corporate cultures.
- Corporate cultures can be thought of as the aggregate mentality of the people in that organization.
- The brain is the source of creativity.
- Applied creativity is a whole brain process.
- Applied creative thinking is teachable, particularly when using whole brain design and delivery approaches.
- Heterogeneous groups can be more creative than homogeneous groups.
- Claiming creative space is an essential strategy to optimizing applied creativity.
- Metaphorical thinking is an important ingredient of the creative process.
- The metaphor can be used as an infallible test of conceptual understanding.
- The naturally occurring theta state is a major source of personal creativity.
- Understanding the mental aspects of work and the mental preferences of the worker are essential to increasing both productivity and worker satisfaction.
- Diversity is the hottest of the HRD hot buttons of the 90s. Mental diversity is the most important aspect of the diversity issue.
- I am constantly amazed at the number of people of all ages who are still trying to find out what they will be when they grow up!
- No matter how different you are there are other normal people like you somewhere in the world.

ABOUT THE AUTHOR

Brain Club Member, Ned Herrmann is equally at ease in the classroom, the office, the artist's studio, the research laboratory, and the boardroom. In each of these situations, he aspires to be a "living example" of the whole brain concepts he is developing. For the last fifteen years, he has dedicated his life to applying brain dominance theory to teaching, learning, increasing self-understanding and enhancing creative thinking capabilities on both an individual and corporate level. Ned's contribution to the universal application of brain dominance has brought him worldwide recognition. In the past three years, he has keynoted world conferences on Creativity, Gifted and Talented Children, Instructional Systems Design, Training & Development, and Cerebral Dominance.

Though known today as a master of human resource development, in college Ned studied the sciences and performing arts. He majored in both physics and music. This dual interest, in the arts and the sciences, which seemed to pull him two separate directions, continued to intrigue him through a long career with General Electric. And with this background, he was well prepared for what would eventually become his life's work: to integrate the scientific study of the brain with the study of creative human development, in his search for the nature and source of creativity. Ned became Manager of Management Education for GE in 1970. With his primary responsibility of overseeing training program design, the issues of how to maintain or increase individuals' productivity, motivation, and creativity were serious concerns. A prolific painter and sculptor himself, personal experi-

ence was a valuable resource. In fact, his participation in an art association panel on creativity first opened his eyes to the burgeoning research on brain function, particularly with regard to the left and right hemispheres of the cerebral cortex. Ned integrated his own concepts with Left Brain/Right Brain theories into a new 'brain dominance technology', which produced immediate and dramatic advances in individuals' self-understanding, productivity, motivation, and creativity.

In 1978 he created the Herrmann Participant Survey Form to profile workshop participants' thinking styles and learning preferences in accordance with brain dominance theory. Sponsored by GE, he developed and validated the Herrmann Brain Dominance Instrument (HBDI) (the scored and analyzed Participant Survey) and designed the Applied Creative Thinking (ACT) Workshop, internationally recognized as a leading workshop on creative thinking. Ned discovered that the popular Left Brain/Right Brain theory was limited in application and didn't account for major differences in mental preference. Continuing research and application of the HBDI led to the development of a comprehensive four part Whole Brain Model, which he continues to use today.

In 1982, Ned founded Applied Creative Services, Ltd., now headquarters for the Ned Herrmann Group, to provide whole brain products to corporate training programs and individuals alike. The HBDI and a variety of workshops and products are offered. Ned and his company continue to provide innovative workshops and consulting

services for major corporations around the world. Ned also founded the Brain Dominance Institute to further research on brain dominance on an international level and to publish practitioners' writings and artwork in the bi-annual *International Brain Dominance Review*.

Ned Herrmann has been featured in *Business Week*, *New Age Journal*, *Discover*, *USA Today*, and more recently appeared in *Training*, *Reader's Digest*, *Cash Flow Manager* (Germany), *Director Magazine* (UK), *Fonction Personnel* (France) and the *Sunday London Times*. Ned has been named Brain Trainer of the Year (1989) by ASTD, and included in the *Executive Excellence Magazine's* listing of 100 personalities with unique perspectives on Management and Leadership. Now in its second edition, Ned's successful book, *The Creative Brain*, allows laymen and professionals to benefit from his knowledge of thinking and learning styles, brain function, creativity and training. He is currently completing his second book, *What Will I Be When I Grow Up: A Guide to Self-Discovery for All Ages*, which will be published in early 1991.

For more information about the Herrmann Brain Dominance Instrument or other products, please contact:

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 Lake Lure, North Carolina 28746
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 Fax (704) 625-2198

SMART

CETACEANS

Professor Michael Crawford, (new Brain Club Member number 257) author of *The Driving Force* and world expert on animal intelligence and the effect of nutrition on the development of the brain, responds to Mowgli.

I was pleased to see *Synapsia* addressing the topic of whale (cetacean) intelligence in the Spring 1990 issue. *Synapsia* readers may be interested to know that in terms of Rudyard Kipling's definition of learning 'what, why, when, how, where and who', many people feel that the cetaceans are 'three serving men short' because there is 'no evidence' that they can communicate on matters of when, how or why. Some years ago I was duty officer at Whipsnade Zoo when an unscheduled performance was executed by the dolphins.

One out of three bottle-nosed dolphins appeared to be sickly and an attempt was made to catch her. The response was that her two colleagues closed in and swam in tight formation on either side of her, preventing the placing of the net.

The solution was to chase them into the small side pool and bring down the separating sluice-gate to make the business easier. The dolphins' response was that of great agitation which subsided when they lined up again in formation and dived to the bottom of the pool. In unison, they squeezed their noses under the bottom of the sluice-gate, flicked it up and swam underneath it, out to freedom.

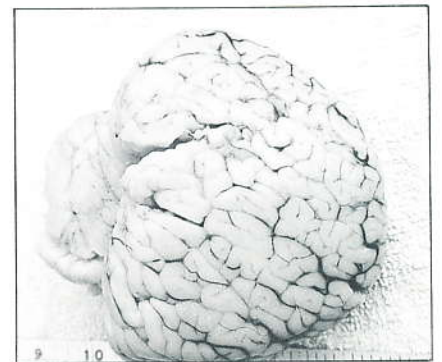
That rather suggests they were capable of dealing with 'how' and 'when' and at the start, had certainly come to a conclusion about 'why'. Of course, it might have been a conclusion that did an injustice to their keepers!

Most people would accept that brain size is not necessarily related to intelligence although they would also accept that a computer with a larger number of chips will be capable of more diverse activity than another with a smaller number of the same. One obvious factor is that there has to be more brain than is necessary for mundane regulatory matters to offer spare capacity and so size, in relation to the basic demands of life, is likely to be important. Anyway, the word intelligence was invented to distinguish us from other animals so, by our 'definition', other animals cannot be intelligent!

It is consequently somewhat senseless to try to compare the brain function of *Homo sapiens* with *Tursiops truncatus* without properly defining the ground rules. A comparison of 'function' might be a more appropriate approach than 'intelligence'. Different species have different sets of problems and different computer designs to deal with them. Some computers, like the LISP machine, are very clever at handling ideas, whereas others are better at handling numbers. Indeed it would be rather fruitless trying to compare a LISP with a BASIC program.

The photograph which I enclose is of a baby dolphin's brain which died at one month of age. What is interesting is the degree of convolutions (which almost certainly reflects dense packing of its 'chips') and the extent to which the cerebellum is developed.

This high degree of cerebellar development is likely to be related to the fact that it operates in a three



A baby dolphin's brain at one month of age



dimensional manner. Like the birds, and particularly the raptorial birds, it has a requirement for co-ordination in three dimensions which the cerebellum serves. If the dolphin stores information in three instead of two dimensions, much more of its brain capacity might be needed to store 'cubes' instead of 'squares'.

In John Lilly's famous work, blind-folded dolphins were found to be able to use their echo-location function to distinguish, at a distance, between objects according to their density. Such data suggests quite a sophisticated sensory and interpretative system. Studies in Antwerp by Anne-Catherine Lescauwat have shown that the dolphin's echo-

neuronal packing, and as each neurone makes 6,000 or more connections with other neurones the likelihood that such a brain does little or nothing with its sensory input is, I would suggest, rather remote.

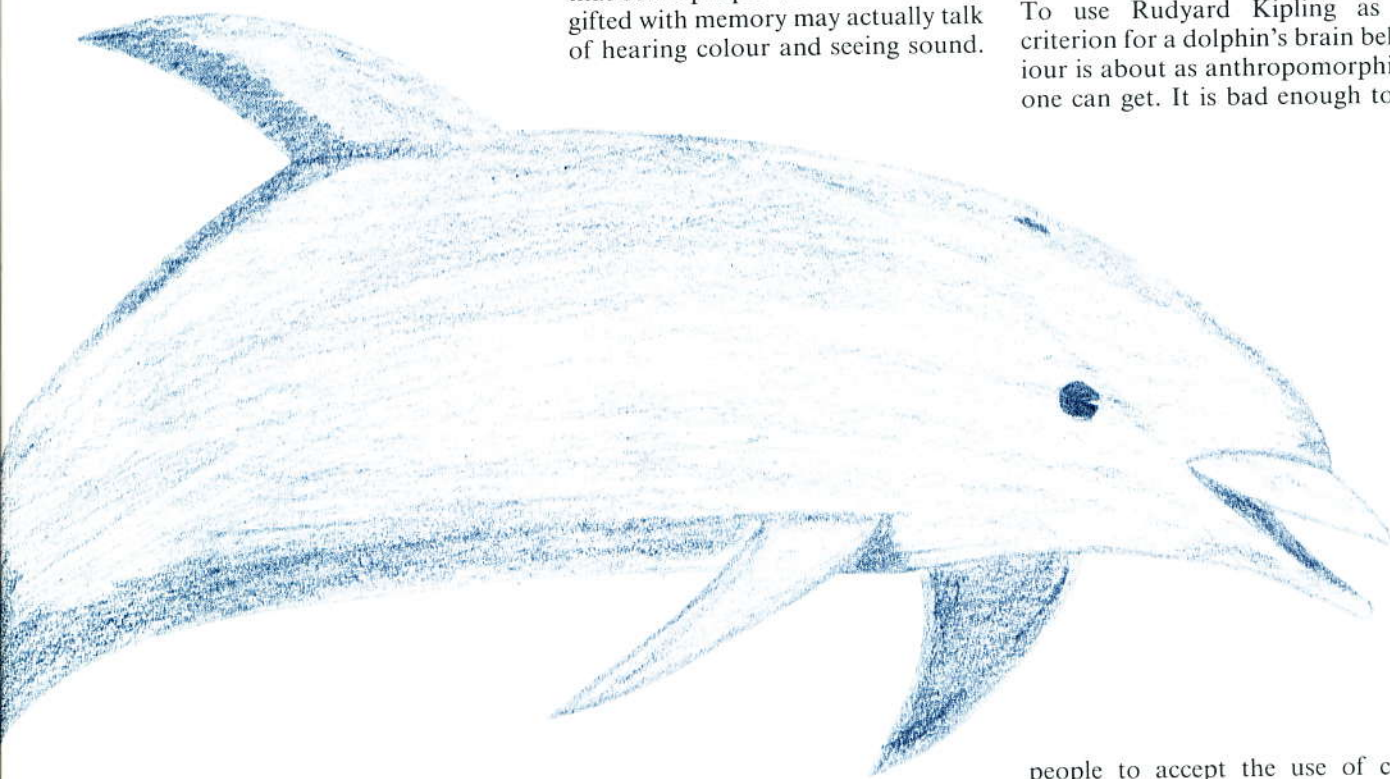
It is possible, for example, that the capacity of the dolphin brain offers it a potential for memorising audio maps of the ocean geography. Indeed, as fisher folk know, the fish and squid are not just found anywhere but in their own feeding grounds which relate to the geography and geology of the ocean, its currents, rock and other formations on which marine life grows.

The dolphin may, for all we know, *see sound*. It is an extraordinary fact that some people who are unusually gifted with memory may actually talk of hearing colour and seeing sound.

tely nothing, or a lot, without us knowing about it. If a dolphin did take a view on our capabilities in using sound, it would, I suspect, be that we are pretty primitive!

The trouble is that we analyse other species by relating to ourselves. People often conclude that dogs are highly intelligent because they do similar things to us if we train them. By contrast, cats are perceived as dull because they have a mind of their own. The fact that *Homo sapiens* can capture cetaceans, place them in sensory deprived environments and make them perform as a basket ball player to get their food, simply demonstrates the power of such techniques.

The real problem is the attempt to judge such species by our standards. To use Rudyard Kipling as the criterion for a dolphin's brain behaviour is about as anthropomorphic as one can get. It is bad enough to get



location discrimination (using sound waves like radar) goes down to 5 microseconds or 150 KHz frequency. Human children can hear at 15 KHz; most adults are lucky if they can detect sounds at 10 KHz. Usually, the echo-location system is thought of as only offering a means whereby the dolphin can locate its food. A range of the dolphin's calibre, used for discrimination, has to be matched by a neuronal network capable of making sense out of the signal-to-noise ratios, just as we make sense out of what we see with our eyes.

A glance at the baby dolphin's brain suggests a dense rather than loose

This might be expected from an unusually large number of synaptic connections enabling the brain's ability to cross-reference information to a higher degree. If that is conceivable, is it not also possible that our view of the cetaceans' inability to communicate, based on the poor variety of the noises they make, is misleading? Just because we communicate with words in the middle range of our audio detection frequency, does that mean the cetaceans have to do the same? With such a wide frequency range at their disposal, they may be doing absolu-

people to accept the use of cross-cultural intelligence tests, say to compare Japanese and British children, never mind trying to compare different species, let alone one on land and the other in the sea. The computer hardware which they possess, the sensory inputs, the sense they must make of them, the challenges and problems with which they separately have to contend, are somewhat different.

We would display our own intelligence and humanity more adequately by examining the vast range of abilities of our fellow creatures more humanely and intelligently!

A BIRD BRAIN IS A GOOD BRAIN

Bird Brain Teaches Neurologist's Brain

One of the longest and most deeply held beliefs about nerve cells in the brains of animals is that they do not divide. Recently bird brains have thrown a spanner in these conceptual works: it seems that in the bird brain, neurons can go on dividing *and* migrating throughout the bird's life.

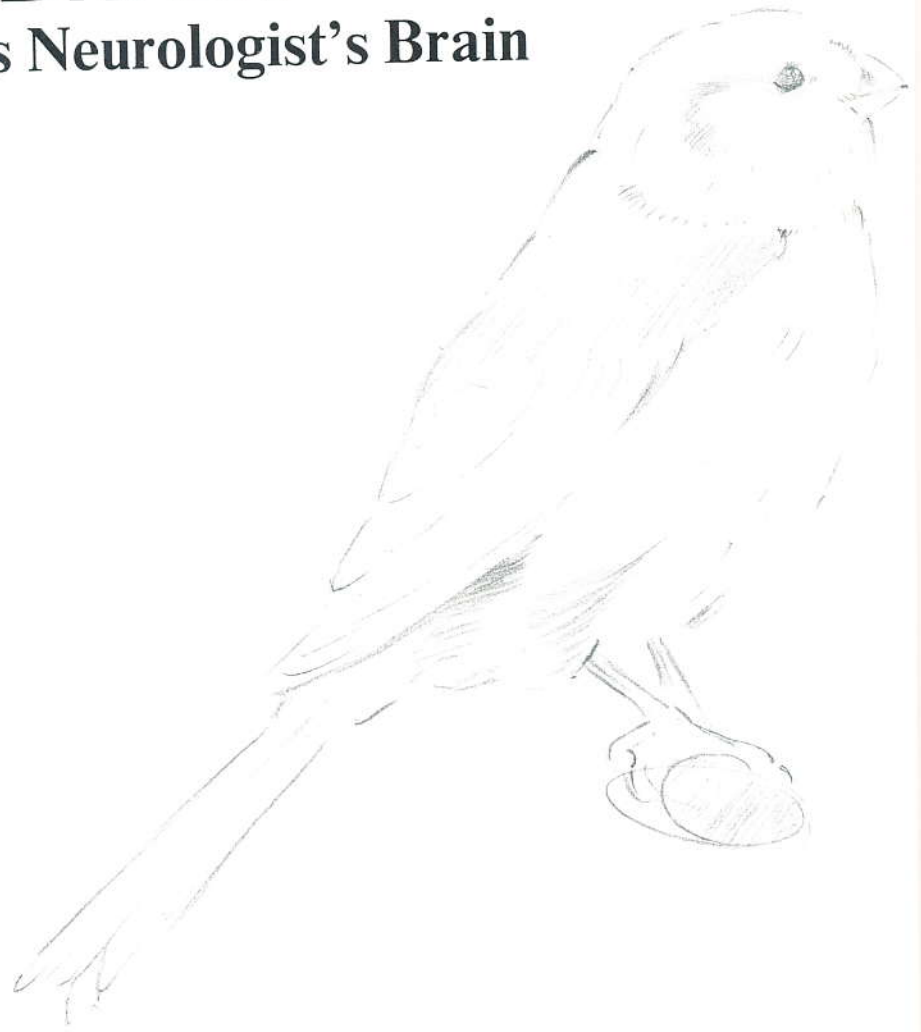
Arturo Alvarez-Buylla and Fernando Nottebohm of the Rockefeller University in New York investigated this question in the developing brains of canaries. The canaries were injected with a radio-labelled compound thymidine. Because thymidine is a component of DNA, the labelled compound enabled the researchers to identify the areas in the canaries' brains where cells were dividing (cells that divide produce new DNA).

The researchers found that the majority of the dividing cells were born on the walls of the cavities that are filled with the fluid in the brain – the ventricles. Once born the cells began to migrate. After only one day, a few of the brain cells appeared to have migrated from the edge of the ventricles. The highest number of migrating cells in the canaries' brains studied were found 20 days after the injections, by which time the cells had travelled a distance of 5mm from their original site – a massive movement in terms of microbiology.

Even more significantly, of the two types of cell in the brain, neurons and glial cells, the researchers believe that the dividing cells they observed were young neurons. Even more significantly the researchers noticed that the overall number of labelled, migrating cells declined after 20 days, but that the number of labelled cells that were identifiable as neurons *continued to rise*.

Alvarez-Buylla and Nottebohm also noticed that the migrating cells seemed to travel along the edge of glial cells as they move away from the ventricle. The glial cells probably provide structures that help to guide the young neurons. The glial cells also seem to speed up the neurons as they migrate: when the new cells travel through the glial area, the new cells move at approximately 28 micrometres an hour – much faster than the 5 micrometres an hour that researchers have estimated for cells in the brains of young developing animals.

The young neurons have to move over much larger distances, and faster, than dividing cells in developing brains. They also have to move in a brain whose size and shape are relatively fixed. It is these features which makes this cell division in the brains of adult birds unique, and raise profound questions about cell division in all other living creatures.



SINGING FOR THE SYNAPSES

New research indicates that newly hatched birds do not initially know how to sing. Their eventual masterful serenades are in fact learnt by the TEFCAS process (Trial, Event, Feedback, Check, Adjust, Success).

At the University of Rochester in New York, Kathy and Ernest Nordeen have found that, as young Zebra Finches learn to sing, a large number of new cells are created that modify the pathway between the brain and the vocal muscles.

Male Zebra Finches learn their song between 20 and 65 days after hatching. For the first 30 days they just listen. Then they begin to practice their song, perfecting it over the next 2 to 5 weeks. As the birds are mastering their songs, new cells grow in a part of the brain called the hyperstriatum ventralis pars caudalis (HVC). Nerve cells in the HVC send signals to two different centres in the brain; one of these centres, the archistriatum, relays information to the motor-neurons controlling the vocal muscles.

To identify new nerve cells in HVC (*Nature*, volume 334, page 149) the Nordeens used two different markers: they gave young Zebra Finches daily injections of Thymidine containing Tritium – a radio-active isotope of hydrogen. The isotope marked the cells that were dividing at the time of the injection.

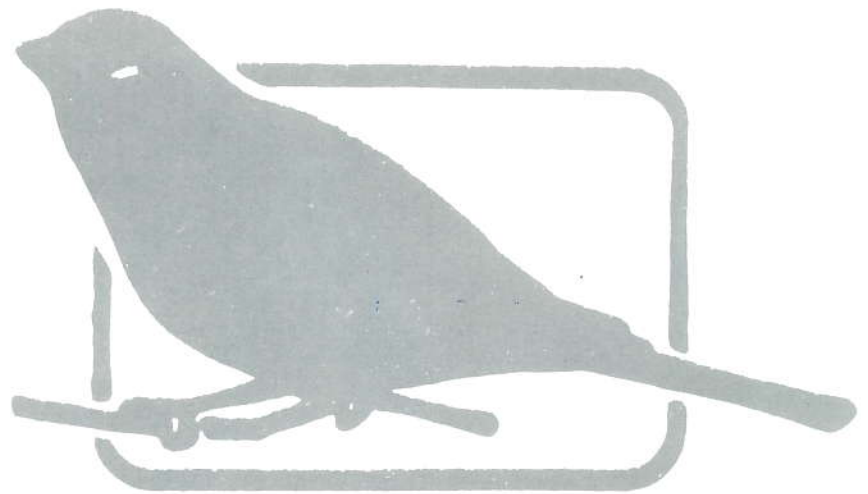
To pick out the nerve cells in HVC, the Nordeens injected a fluorescent dye near to where these nerve cells terminated in the archistriatum. This dye was transported backwards along the axon of the cell and into the cell

body. By counting the cells that were marked with both dyes, the Nordeens found that more than half of the 18,000 new cells were part of the pathway that controls the vocal muscles!

Earlier research has tended to indicate that the vision and muscle control pathways in mammals alter

shortly after birth as the connections between nerve cells are broken. The new research with finches shows that it is not just changes in the connections between nerve cells that alters the pathway; birds also have the option of adding in new cells.

With appropriate training, would mammals?



BODY AI



ND SOUL

An explanation of *Synapsia's* cover.

In 1984, a Swedish ship's captain, who was also a master of computer systems and computer-operated ocean traffic control, took Tony Buzan's course on **BRAIN TRAINING** and **MIND MAPPING**. Tremendous things were expected of the captain, Ulf Ekberg, for it was widely known that his 'dream hobby' was to be an artist, and in his organisation he regularly contributed cartoons to the company's journals and periodicals. He had also begun basic portrait and landscape studies.

At the end of the course, when all students were to complete their final **MIND MAP**, Ulf's mind went blank!

Disappointed and frustrated, he went home vowing that on the coming weekend he would devote a couple of hours to completing the course in the grand manner he had envisioned.

Partly to rid himself of the frustration of the day, Ulf went to work on his large boat. The boat was in the snow-filled back garden of his home on the outskirts of Stockholm. As he finished his task, he slipped and fell ten feet to the ground. It was a freezing Scandinavian winter's day, and the ground was ice-hard; to his amazement and delight, Ulf landed on his feet perfectly! As he confidently took his first step, he fell to the ground in pain, and had, literally, to crawl back inside. The doctor's diagnosis confirmed that Ulf had one hairline fracture in the heel of each foot, and that although the injuries were not serious, he would be forced to lie, sit or crawl around his house for a two month period before being able to walk properly again.

After the initial anger at his new immobility had subsided, Ulf decided to tackle one of his lifetime ambitions – to paint in the style of Salvador Dali and to do so by combining this ambition with the concept of a single-image master **MIND MAP** which incorporated within it all the elements of the course he had attended, as well as his own interpretations and extrapolations.

Among the items he wished to include were:

1. The concept of introspection – the brain seeing itself seeing itself. . .
2. The Greek/Roman ideal of 'mens sana in corpore sano' (a healthy mind in a healthy body).
3. Love as a necessary concomitant to healthy brain function.
4. The breaking of the conceptual boundaries which had held that the brain is arithmetic ($1+1=2$), in the context of the new realisation that the brain is synergetic ($1+1 = \text{more than } 2$).
5. The concept of time as a variable or 'free' concept.
6. The ability of the mind to create what it wishes.
7. Juggling as a metaphor for learning, balance and self-control.
8. The fact that a more comprehensively-trained brain will tend to have a strong concept of justice.
9. The biggest brain on planet earth.
10. The various manifestations of the brain as a 'musical animal'.
11. The basic question of existence.
12. Einstein's concept of relativity in conjunction with the concept of the brain as an infinite association machine.
13. The belief that understanding brings peace and ends war.
14. The brain as magical.
15. The concept of mistakes as acceptable and hopefully enjoyable parts of the learning process.
16. The breaking of all known boundaries.

This first true example of **MIND MAP** art has already been published in collected editions, and is rapidly becoming a collector's item and universal symbol.

Original numbered and signed copies are available to interested Members. For information contact: The Buzan Centre Ltd, Suite 2, Cardigan House, 37 Waterloo Road, Winton, Bournemouth, Dorset BH9 1BD.



THE ROMANCE OF THE

ARTIST



by Lorraine Gill

Lorraine Gill, one of the world's leading modern artists, takes a witty look at our misconceptions concerning art and the artist.

Walking the five miles through scrub and wild fields to school age 5 in the then virgin country surrounding Sydney in Australia; or rather being dragged by my elder sister; I would never have dreamed on the day I drew a princess on the blackboard with coloured chalk that I would live the life that others have dreamed of: a romantic artist.

I received praise for that drawing, hence more drawing and more drawing. My maths teacher banged his fist on the little wooden desk holding a 2 shilling piece close to my terrified face and shouted my stupidity to the rest of the class; hence I am not very good with numbers and terrible emotional blocks occur when I am asked a mathematical question.



The only possible time for drawing was after dawn, before the searing heat baked the little house with its tin roof into an oven. We could fry eggs on the cement.

Later, in London, I would look back with some gratitude for that heat as the opposite of my romantic garret in Clapham Road when dragging coal on a shopping trolley to light the little fire in dead of winter when speaking would send out steam of mist.



The best time for working was still early mornings and late evenings, when the noise of traffic, trains, planes, and the workers downstairs would not be effing and blinding their way through the day. London looked romantic at 4 am as I sat in the bus with other early morning workers going to clean offices, and then on to Art School. Later still, I would even look back on that with gratitude as I worked as dogsbody, waitress, selling souvenirs, barmaid, cleaning, washing, ironing for

tourists who had journeyed on a pilgrimage to the dead heart of Australia, Ayers Rock, where no romantic artist had dared stayed for long.



In some countries artists are known as airy fairy poofers, who don't really know a day's good work in their lives. They are parasites on society, anyway, all they do is lie around, get up to Bohemian deeds, knock back the plonk, and generally splash a bit of paint around; take that Picasso for instance, what a con, a visual dyslexic, these artists live in a dream world, in fact the value of your house could go down if one lived next door.



I look back in gratitude, for if the romance of an artist's life is a myth, then the opposite could be called hard reality, and that is what I had to find in Art, in painting, the language of it.

Why was Picasso a con anyway? Who knew enough to know he wasn't but did not share it with us? Why do people always say they would like to have been taught art properly? Why have they been conned out of their natural creativity; and why do they stand in front of paintings and say "Well I know what I like" without being informed that there is more to painting than nice colours, rude bits or cuddly cats and kids with big eyes?

Art is still seen as a form of therapy in schools, for if the teachers knew more (after all they were brought up in the same institutions) they would be out doing it themselves wouldn't they? And so the vicious circle goes on; Seeing intelligently, sharpening perceptions, reading paintings, drawing planes and knowing how to put the wings on remain an historical site to be excavated. The seeming black hole of art deprivation, in the

year 1990 is at last bouncing back a particle of light with books by such as Betty Edwards (*Drawing on the Right Side of the Brain*) to give clues. It is time artists came out of their cupboards with dealers and curators (some are trying) to explode the romance.



Like doing push-ups, or any skill we attempt, Art is about training and discipline, constant work, training perception, training the hand. 'Learning' to see; there will be no wings on that aeroplane if you are not shown how to put them there; Picasso is a moron until someone explains why he isn't.

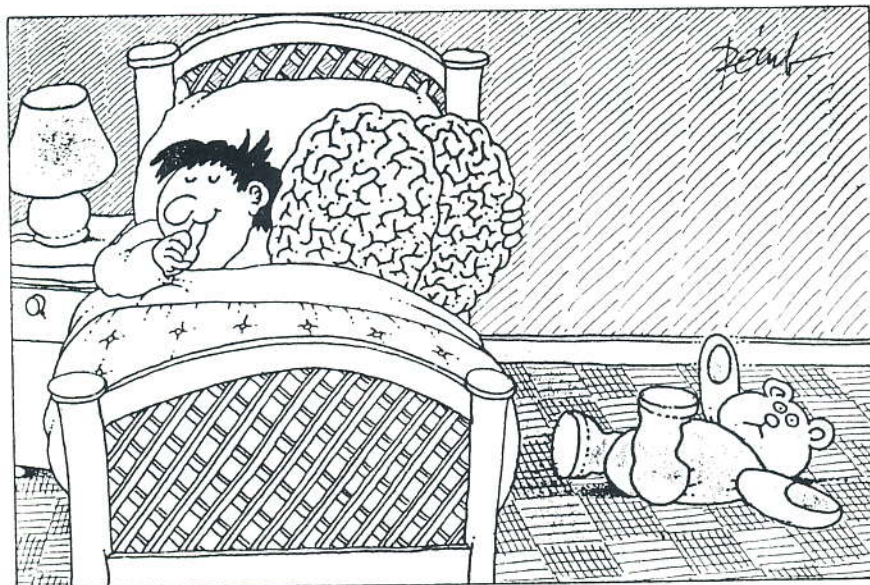


POETRY CORNER

Seeds to the four winds
New beginnings every where
Starting something good

by Vanda North
Member No. 2

ABOUT INTELLIGENCE



by Tony Buzan
(Member No. 1)
*Synapsia's Update on the
World of the Brain*

Brain on Fire!

At what time in human history did that first 'spark' of intelligence start us on the path of learning to use fire?

Geographica reports that this pre-historic advance, which ranks in importance with stone tool-making, appears to have occurred much earlier than scientists had thought. The most recent evidence for this revised view comes from Swartkrans, a large cave excavation near Pretoria, South Africa. Archaeologist C.K. Brain (!) found charred animal bones scattered throughout limestone strata estimated to be a million years old and older.

Experiments based on Brain's work show that the bones were heated to temperatures similar to those occurring in camp fires.

Also in the cave layers, Brain found remains of the ape-man *Australopithecus robustus* and a larger brained hominid *Homo erectus*.

The findings obviously suggest that these early ape-men were the ones who tended those fires.

The earliest evidence previously found for the first human use of fire came from Zhoukoudian, a cave near Beijing, China. There, amid remains of *Homo erectus*, a layer of ash and burned animal bones dated from a half a million years ago – thus Brain's findings immediately double the length of time we estimate that that level of 'bright' intelligence has walked the earth.

Rodan Babies

Traditional psychologists have said that if you hide a three-month old baby's teddy bear under the blanket, the baby will think the bear has disappeared.

Not so, claims psychologist Dr. Elizabeth Spelke, from Cornell University in America.

Spelke claims the baby knows *perfectly* where the teddy bear is.

Spelke's research supports the claim that we are *born able to think*; that thinking is not something simply acquired. Thinking, it appears from this new research, begins as early as

does seeing and touching – i.e. at the moment of birth, if not before.

Spelke's research was based on the fact that it is easy to find out if a baby is thinking that something is new or unfamiliar; it will look at it for much longer, whereas the hidden teddy bear merits only a glance, suggesting that the baby remembered where it was, and therefore considered it familiar.

Using this technique, Spelke has found babies know that solid objects have to move along a continuous path to get from one place to another, and that one solid object cannot pass through another. They also know that a solid object has to move as a single entity.

If you show a baby the two ends of a moving bar with the middle hidden behind a block, it will know that the rest of the bar is there in between.

If, however, you use tricks to produce an optical illusion of an impossible event, such as one solid object passing through another, the baby will look for much longer.

Spelke claims that her experiments prove thinking is as biologically basic as are our sensory and motor functions.

Spelke's work may well disprove two widely held theories:

1. That babies only learn to think about the world by doing things to it.
2. That they learn to think about the world only by its impact on them.

These theories hold that thinking doesn't really begin until after earlier infancy ends.

If Spelke's research is correct, the implication is that infants are one of their own best early teachers.

More Bright Cave Men

In addition to the fire-using *Australopithecus* and *Homo erectus* mentioned in 'Brain on Fire', palaeontologists in Israel have discovered further evidence of the fact that our forebears were much more intelligent than we have hitherto thought.

They have discovered a fossil bone which shows that Neanderthals may have been equally as capable of speech as we are today. The bone, the hyoid, is from a Neanderthal who lived between 50,000 and 60,000 years ago.

The hyoid, which is a small U-shaped bone, is a key part of the vocal apparatus in modern humans.

The hyoid is situated in the neck just above the thyroid cartilage commonly known as Adam's apple. It is attached by muscles and ligaments to the slender spine called the styloid process which projects from the temple bone at the side of the brain case. Muscles also are connected to the tongue, to the lower jaw and to the framework of cartilages that surround the larynx. To date, with little direct evidence and practically no fossils of the speech apparatus, researchers have used various indirect evidence in an attempt to solve the problem of when human beings first developed a spoken language.

With such little evidence, the estimates have varied widely: Philip Tobias of the University of Witwatersrand in South Africa argues controversially for an earlier origin of spoken language. He suggests that it had already evolved approximately 2 million years ago when the

first lineages of our own genus *homo*, appeared.

Another major theory is that speech arrived only with the anatomically modern human *Homo sapiens* approximately 100,000 years ago.

Jeffrey Laitman of the Mount Sinai School of Medicine, New York, and his colleagues fixed the date between these two extremes.

They believe that language began developing with *Homo erectus* (the probable fire user!) approximately 1,500,000 years ago. It took a further 1,000,000 years, they believe, for the full vocal apparatus to evolve into its modern form. By Laitman's calculation, the first hominoids to be fully equipped for speech production were the earliest forms of *Homo sapiens*.

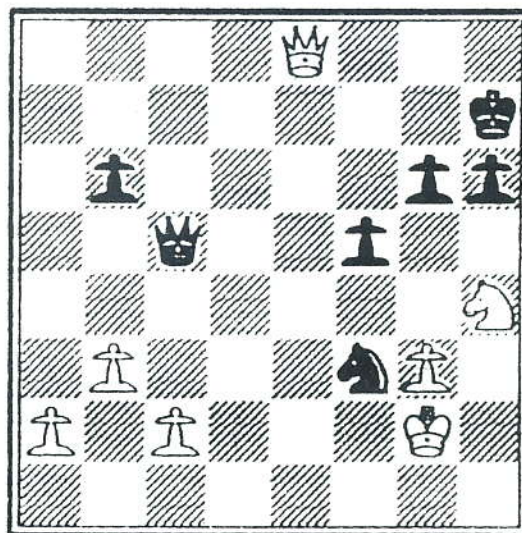
If Neanderthals were able to speak, Laitman and his colleagues have helped answer the question of 'how?'

The more intriguing question of about *what* they spoke remains still to be answered...



Chess positions for *Synapsia Magazine* set by Raymond Keene, OBE

This position is taken from the game
White - Wolff Black - Hodgson
Watson, Farley & Williams/City Of London Corporation 1990
How can Black lure the White king into an unfortunate position?
Solution in next issue.



Solution to the problem in the last issue:
1 Nxc8 Rxc8 2 Qe6+ and 3 Qxc8+

AMAZING

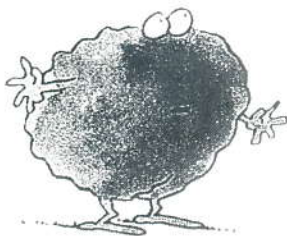
MEMORY STORIES

EVERYMAN'S STORIES — PROOF THAT YOUR MEMORY IS PHENOMENAL

SURPRISE RANDOM RECALL

You are listening to the radio and suddenly a tune or melody is played that makes you a time-traveller of a type that would have been the envy of H.G. Wells, Jules Verne, or any member of the Starship Enterprise! In an instant you travel back over whatever number of years, to a situation where that music or melody was playing at that time, and around which you had a meaningful and moving set of experiences.

You drive down a street in a country village, and for a shadowy moment have a feeling that you have been there before. And then, with a blinding flash, you realise that you *have* been there before, and that you are driving down the street in the opposite direction to that which, once before in your life, you drove down it previously.



You are having a conversation with a friend, who is desperately trying to have you remember an event that you shared together, and which you have totally forgotten. Suddenly your friend mentions a single word, or a single incident, and with a shout of "Ah yes!" the entire event comes flooding back.

As an adult, you visit your first school, and turn a corner. A smell that you have not experienced for twenty or thirty years instantaneously transforms you to yourself at the age of five.

NEAR-DEATH TYPE EXPERIENCES

Someone is driving down a motorway at 80 miles per hour "on a dark and stormy night" when suddenly across the barrier, like a monster out of the gloom, comes a ten-ton articulated lorry heading straight for him.

On the sandy ocean floor a bather lies flat on her back, oxygen-deprived and dreamily looking up through the blue waters at the light playing on the waves on the surface of an ocean she knows she will never see again.

A mountaineer feels the rush of air streaming past him, sees the blurred shapes of the mountain wall past which he is plummeting at an accelerating rate, and waits for the impact a hundred feet below.

Common to the three individuals we describe is the fact that through some act of fortune they survived.

Common also is an experience of which you may well have heard – the Total Life Recall. When these experiences were first reported, there was worldwide scepticism. Now that there have been literally *millions* of such reportings, the field of psychology is accepting such events as almost commonplace, and definitely real.

What is especially interesting about them is that *they are total*. When pressed or even persuaded to admit that what they had experienced was simply a few highlights of their life, people concerned become especially assertive and reiterate that what they saw was their *entire life IN DETAIL*.

These experiences show that the brain, under such moments of absolute life and death confrontation, will instantaneously review all its knowl-

edge, in an amazing last-second search for anything that may help in the situation.

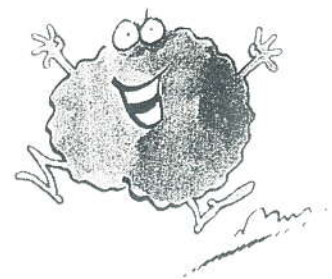
These experiences also suggest that each one of us may indeed have total recall of every second of our lives.

DREAMS

You wake up in the morning having dreamt about a friend or even acquaintance who you have not consciously remembered for ten, 20, 30 or even 50 years. The dream you have just experienced is immaculate in its detail, and the face and often body of the person about whom you have dreamed was so perfect that it seemed almost real.

If that image can appear so perfectly during any random night's sleep, then it *must have been stored* in your brain for all those years *perfectly*. How many other such images that you have experienced and not consciously recalled for some time are so perfectly stored? The answer is probably most of them. The quest is to learn approaches to recall that will enable us to 'fish out' what we want from that vast store.

Your challenge is to begin that journey!



WOW!

by Lana Israel

Lana Israel's (Brain Club Member number 222) amazing success story continues with an appearance on one of America's top television shows 'Good Morning America' gets rich quick.

"Thirty seconds," he said.

I quickly glanced around the large room filled with sets, video-cameras, teleprompters, and cords and more cords. When I focused in on 'the Lady' sitting facing me, he started the countdown, "Five, four, three, two".

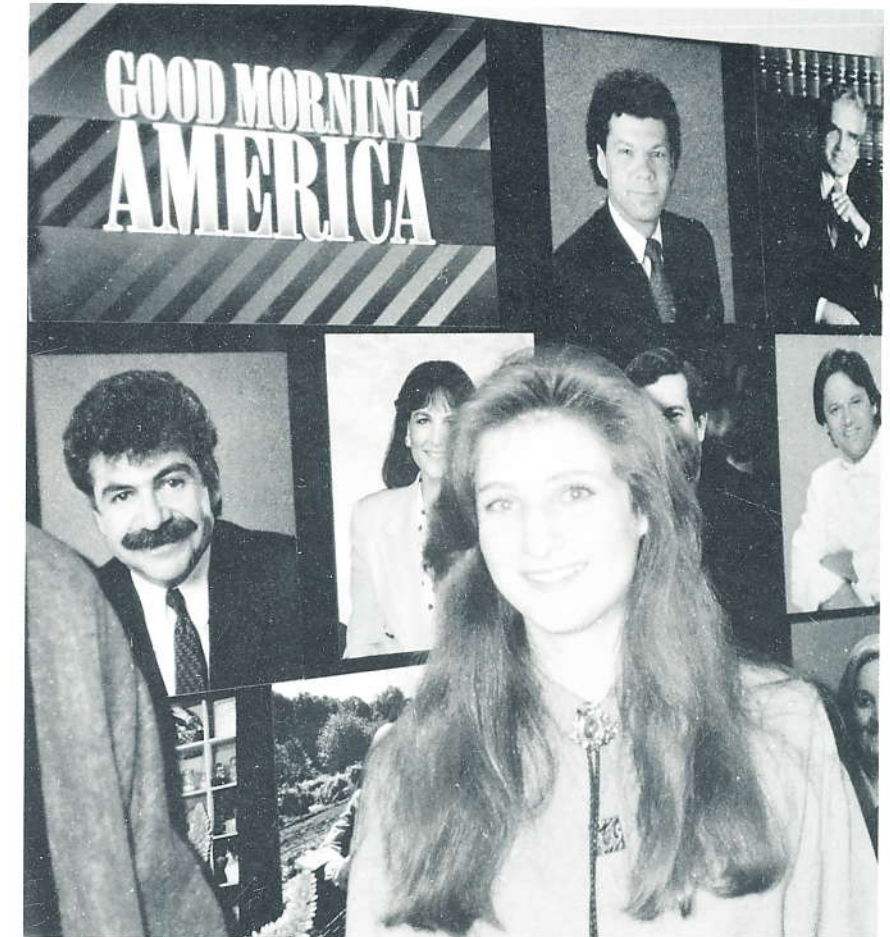
About a second later, the lady began, "It seems like the only jobs available for teenagers today range from flipping burgers to...".

As she continued it finally hit me, I was on Good Morning America and for the next ten minutes would be watched by over five million Americans! Wow!!!

This adventure actually began a few months ago when I received a phone call from an intern at Good Morning America. I explained to the young lady that I have a business, Brain Power for Kids, in which I test learning methods and present them through lectures and the sale of my book. I had a quick interview and the intern asked me to send her more information. I was told that she would talk to her producer and contact me if I was selected for the show. Well, you already know that I was, but at that time I didn't. I had to wait months until I found out.

(months later)....

I stepped off the plane greeted by my parents and younger sister after arriving from summer camp. After



hugs, kisses, and the traditional "Look at you, you've grown, your hair has gotten longer," my family began arguing.

"You tell her."

"No you tell her."

"Tell me what," I said.

"Lana, you're getting on a plane Tuesday," giggled my mother.

"Oh?" I replied.

"Yes, you're going to New York," she said as we walked through the airport.

"Do you care to expand on that, Mom?"

"You're going to be on Good Morning America!!!!!!!!!!!!!!" she shrieked.

I stopped, caught my breath, and looked at my family with a huge grin stretched across my face!!!!!!!!!!!!!!

So that's how it started and it ended with my father and me flying to New York. Good Morning America was doing a segment on young entrepreneurs and I appeared on the show with two other teenagers. Joan London (or "the Lady" as referred to in lines 6 & 9) interviewed me. She asked me how I began my business and I explained how it escalated from a science project based on Mind Mapping.

She also asked me about career plans. I explained that I had not set my mind on a specific profession, but wanted to concentrate on building up my business, Brain Power for Kids, which I feel demands involvement in many areas: science, writing, public speaking, public relations, and education.

The moral of this article is that you should always answer your phone politely because you never know who's on the other end.

MENTAL WORLD RECORDS



Mental World Records will cover all areas of mental endeavour and will keep readers (who are encouraged to send in any information they have in this area) regularly informed of the top rankings.

THE RECORDS SO FAR

In the last issue we established four world record holders:

Numbers: the Memorisation of Pi

The world record holder is:

Rajan Mahadevan who memorised thirty-one thousand eight hundred and eleven (31,811) digits of pi.

Chess

The world record holder is:

Gary Kasparov with a ranking of 2,800.

Speed Reading

The world record holder is:

Sean Adam with a reading speed of 3,850 words per minute.

Creativity

The world record holder is:

Tony Buzan, Fluency 249, Flexibility 94, Originality 368. Throughout the test Tony also achieved an originality score on the figural scale of 100%.

Intelligence Quotient

IQ is a concept often mistakenly assumed to have begun with a desire to limit peoples' freedom by classifying their intellectual capacity. Nothing could be farther from the truth.

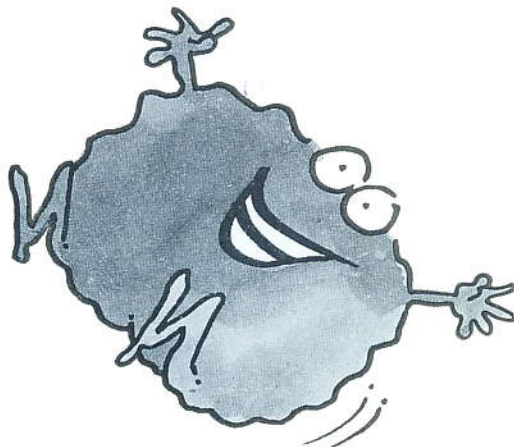
In the early part of this century, a Frenchman, Stanford Binet, observed that virtually all students attending universities were from the upper classes. Feeling this to be intrinsi-

cally unfair, he attempted to devise tests that would be 'class free', and that would enable any child to advance through the academic system on intellectual merit alone. In a work of deep social conscience and considerable intellectual rigour, he selected basic abilities such as vocabulary knowledge, ability to manipulate numbers, and short term memory, testing massive sections of the population in each of these skills. Those who scored averagely for any age group were given a score of 100, those scoring below or above being given scores below or above 100 depending on how far they were from average. Thus a score of 70 was particularly low, a score of 130 especially high (in the 'genius' range).

Only in the last few decades has the IQ test begun to form, against the obvious wishes of its originator, its own class system. For a number of years it has been assumed that intelligence quotients are a reflection of an innate ability and are unchanging.

Work by many researchers, including a number of members of The Brain Club, has shown that the IQ score can be seen much like a high-jump bar. Whatever score you achieve may be considered the 'height you can jump at the moment'. With appropriate training your score can go, should you wish, either down or up!

The current world record holder in the two very important IQ categories of vocabulary and recognition and manipulation of similarities is Brain Club Member Sean Adam (who also holds the current world Speed Reading record!) with Weschler scores of 152, translated into Catell scores of 180. These scores are the maximum available for the test



Chess

In the last issue we established that Gary Kasparov is the world's highest ranked chess brain.

Our chess correspondent, Raymond Keene, and the co-author of his book *Warriors of the Mind*, (see The Ionian, page 29) Professor Nathan Davinsky, have kindly helped *Synapsia* discover the ten highest ranked chess players in the world today, and using the same international chess rating system (ELO) they have helped us rank the top ten players of all time.

The top ten players as of this issue are:

TOP TEN PLAYERS OF ALL TIME (E.L.O.)

| Rank | Player | ELO | Nationality |
|------|--------------------|------|-------------|
| 1 | Gary Kasparov | 2800 | Russian |
| 2 | Bobby Fischer | 2785 | American |
| 3 | Anatoly Karpov | 2730 | Russian |
| 4 | Jose Capablanca | 2725 | Cuban |
| 5-7 | (Emanuel Lasker | 2720 | Russian) |
| 5-7 | (Mikhael Botvinnik | 2720 | Russian) |
| 5-7 | Mikhael Tal | 2700 | Latvian |
| 8-10 | (Paul Morphy | 2690 | American) |
| 8-10 | (Vasily Smyslov | 2690 | Russian) |
| 8-10 | (Victor Korchnoi | 2690 | Russian) |

TOP TEN PLAYERS 1990 (E.L.O.)

| Rank | Player | ELO | Nationality |
|------|--------------------|------|-------------|
| 1 | Gary Kasparov | 2800 | Russian |
| 2 | Anatoly Karpov | 2730 | Russian |
| 3 | Jan Timman | 2680 | Dutch |
| 4 | Vasily Ivanchuk | 2665 | Russian |
| 5-6 | Mikhael Gurevich | 2645 | Russian |
| 8-6 | Valery Salov | 2645 | Russian |
| 7 | Alexander Beliasky | 2640 | Russian |
| 8 | Nigel Short | 2635 | English |
| 9 | Ulf Andersson | 2630 | Swedish |
| 10 | Victor Korchnoi | 2625 | Swiss |

Mental World Records

Who are the top ten brains on the Planet in each of the following mental skill areas:

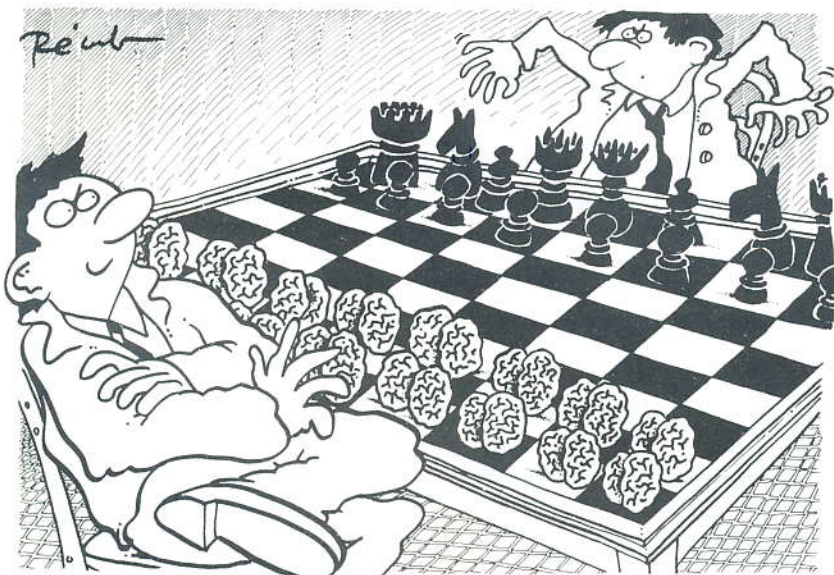
1. Number memory
2. Card memory
3. Date memory
4. List memory
5. Book memory
6. IQ (intelligence quotient)
7. Creativity
8. Reading speed
9. TV quiz championships
10. Chess
11. Go
12. General knowledge
13. Mental calculation
14. Vocabulary
15. Mind Mapping

If you have any information in these areas, please send it to *Synapsia* care of the Editor.

Similarly, if you wish yourself to challenge for the top ten, do so, and send us your results.

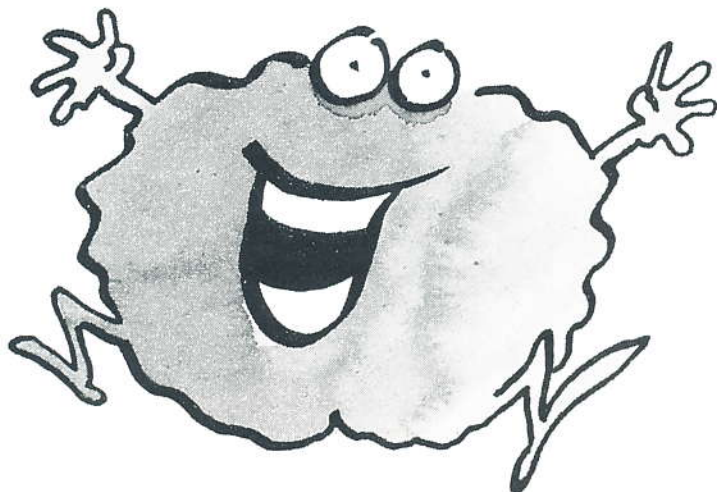
Any suggestions for additional categories will be welcomed.

Synapsia looks forward to hearing from you.



BRAIN CLUB

NEWS



BOURNEMOUTH BRAIN CELL

A small, and most rewarding meeting was held by some Bournemouth members, one student even travelling from Portsmouth to attend. (See Letters page 28 from Matthew Dyke.)

The group was most challenged by the idea of the Mental Olympics and began to plan a strategy of attack! Another idea was for members to take a current issue, research it, and present information to the Cell members, and then Group Mind Map Solutions.

Contact 0202-533593 or Susy Churchill at 0202-513440 for more details.

PALM BEACH CELL

This Cell is working with the Futures Group of Palm Beach. Members of the cell have been assisting the education/planning/city and research project to incorporate Learning to Learn as a core curriculum process for all students.

A follow-up meeting is scheduled for August. More news next issue.

LONDON BRAIN CELL

Fifteen members attended the last Putney Cell Meeting. Several were

new members, and three were visiting before joining. After the meeting they all said they were going to become members. Welcome all.

The main item for this meeting was to plan the agenda for the next six months. This was done, based on the desire by all members to really practice, advance and have assistance with the Learning to Learn Skills. It was decided to play the "Developing Family Genius" tapes and study the skills as a group each month, culminating, on 15th December, with a grand presentation of all the applications and Mind Maps created by the Cell. Tony Buzan and Vanda North have been invited to attend, and it is hoped that the presentations can be videoed for other groups. Afterwards, there will be a party and celebration, just the way all good study days should end.

BC-BC NEWS

From Vancouver: A full report follows from Judy Caldwell, who tells me of a wonderful comment from a 12 year old member of BC-BC on the way home from their last meeting: "There was some severe neuronal firing going on there tonight!"

CANADIAN CLUB

The third meeting of the Brain Club - British Columbia, Canada, was held in June, and the next one will be in progress as this issue of *Synapsia* goes to press.

BC-BC decided to take a leisurely approach in the first two meetings to introduce ourselves to each other well, and to outline what we wished to accomplish.

Discoveries: we are a wonderfully diverse lot, ranging in ages from 12 to 74, working as real estate representatives, retired but inspired consultants in gerontology, students, entrepreneurs, tonsorial artists, advertising agency owners and teachers.

Meeting formats are evolving gently, starting with a meditation which lasts approximately 15 minutes. This allows us to break from the world and focus as a group. Time has been carved out of our monthly 2 hours for brainstorming individual interests and for bringing to the floor the challenges we face the other 30 days of the month.

Each member has already stated goals and outlined a personal plan. Some of us are interested in memory and speed reading, others in Mind Mapping everything from our business futures, school assignments, an upcoming wedding and a better approach to marriage.

We have instituted a language code to control/eliminate negativity. When we fall into the trap of the "I can't's" or mutter about our problems, instead of challenges, we drop a quarter into the bucket and rephrase. A very big, self-flagellating statement may earn a "loonie" for the pot. (Loonies are the new \$1.00 coins with an engraving of a Loon on the face side.)

BC-BC embodies a tremendous, mutually supportive spirit. We like ourselves.

There you have it, Canadian style.

Judy Caldwell
Brain Club Member No. 161

From Josh Caldwell (Brain Club Member No. 160) who also understands the prerogatives of an editor

Hello, this is not the person who just wrote the previous "blurb", it is a new person who just so happens to be the twelve year old member of the Brain Club mentioned last. I wrote this "Blurb, the sequel" to tell the brain cells around the globe that the BC in BC has a real whale of a time. The discussions we have covered here in our club have to do with personal matters, help with "problems" [oops, there goes \$0.25]

in other areas almost as interesting. The brainpower that the group will produce will be incredible. I am looking forward to the next meeting very much. Now on to the thing I pushed for this article space for. I, as the negative slip-up money accountant, would like to tell you all about the BC-BC brainwave about the library. The brains in BC have cooked up the idea of a library of the recommended books in the Brain Club manifesto [in the back]. The BC-BC will use money collected from negative comments and also

money generated from handouts from the members, the other dubious source of these funds are from any money I find hanging around my room. These monies will be collected and stored in a gigantic beer glass that must be able to hold ten pints and has written in red block letters "I bet you can't".

I hope that by the end of the year I will have filled up this mug, and I hope from the money we raise, we can absorb the knowledge from the books we buy.

NEW BRAIN CLUB MEMBERS

In future issues of *Synapsia* we will print a list of new Members for each Quarter. In this issue we give below details of our newest Members. A complete list will be sent to all enrolling Members and to existing Members on receipt of their renewal subscription; if your subscription is due for renewal you will receive an automatic reminder from The Brain Club.

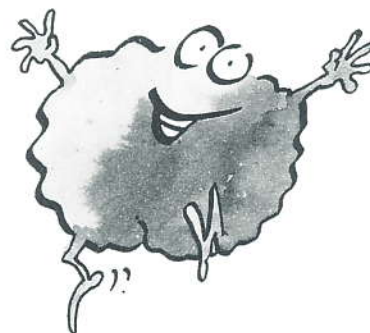
NEW MEMBERS

| No. | Name | Location | Country | No. | Name | Location | Country |
|-----|----------------------|-----------------------|-----------|-----|------------------------|------------------|-------------|
| 230 | Jacek Chrabaszc | Jastrzebie | Poland | 254 | Laurence Edgar | Dundonald | N. Ireland |
| 231 | Paul Elson | Cirencester | England | 255 | Brett Parer | Kingsford | Australia |
| 232 | James Sturgeon | Norwich | England | 256 | Geoffrey Gilmore | Milwaukie | U.S.A. |
| 233 | Howard Atherton | Chertsey | England | 257 | Prof. Michael Crawford | London | England |
| 234 | Paule Clarke | Ealing | England | 258 | Dawn Maiyegun | Catford | England |
| 235 | Stephen King | Cambridge | England | 259 | Mr. D.J.B. Riley | Reigate | England |
| 236 | John Hogarth | Edinburgh | Scotland | 260 | Keith Ketley | Enfield | England |
| 237 | Stirling Elms | Shrewsbury | England | 261 | James Padley | Hythe | England |
| 238 | Mark Pennington | Bowness-on-Windermere | England | 262 | Hamish McMinn | Orpington | England |
| 239 | Peter Pink | Clackmannan | Scotland | 263 | Mr. E.L. Wiggins | London | England |
| 240 | Peter Sinfield | St. Ives | England | 264 | Roy Weston | Stockport | England |
| 241 | Brigitte Lupton | Bristol | England | 265 | Kate Thomson | Lincoln | England |
| 242 | Peter H. Cliff | Scunthorpe | England | 266 | Dr. Barry Buzan | London | England |
| 243 | J.S. Pagington | Melksham | England | 267 | Godfrey R. Moustache | Leicester | England |
| 244 | Mas M. Johnson | London | England | 268 | Mrs. Christina Lee | London | England |
| 245 | Mr. P.C. Turley | Tamworth | England | 269 | Mr. M.T. Battles | Seattle | U.S.A. |
| 246 | Leif Alemyr | Lund | Sweden | 270 | C.C. Gayton | Seattle | U.S.A. |
| 247 | Aileen Lyons | Cork | Ireland | 271 | Mr. L.J. Hallett | London | England |
| 248 | Moira Betteridge | Cleckheaton | England | 272 | Ian Hutchison | Sutton Coldfield | England |
| 249 | Mr. S. Mahmood | Coventry | England | 273 | Simon Roper | Bicester | England |
| 250 | Anthony Peter Barlow | Liverpool | England | 274 | Malcolm R. Rush | Gloucester | England |
| 251 | Andrew Rigg | Blacktown | Australia | 275 | Raymond Keene, OBE | London | England |
| 252 | Keith Stammers | Chiswick | England | 276 | Mrs. L. Stollwerk | Heerlen | Netherlands |
| 253 | Renne Lagrange Davis | London | England | 277 | Roberta Grossi | Paris | France |

BRAIN CLUB MENTAL LITERACY SKILLS CERTIFICATES

The following Members have received Certificates:

| | | |
|--------------------|---------|---|
| ANDREW COLSTON | No. 147 | Rainbow 1 - IQ |
| DAVID SELF | No. 76 | Rainbow 1 - IQ |
| GRAHAM McEWAN | No. 205 | Rainbow 1 - IQ |
| STUART MUSSELL | No. 139 | Grade 9 - Memory Grade 8 - Speed/Range Reading |
| DR. C.S. PREMKUMAR | No. 38 | Grade 8 - Memory |
| RICHARD BIAS | No. 30 | Grade 1 - Special: da Vinci |





SCHOOL CHALLENGE

I am writing to let you know how things are going, and to tell you that I thoroughly enjoyed the first Bournemouth meeting of the Brain Club. The suggestions that arose that evening were particularly exciting – for example the ideas of a ‘bank’ of Mind Maps, and a mental ‘tournament’ at the B.C.

I have recently finished my first year mock examinations. Not utilising all the techniques I know will help me soon, which I am currently mastering, I achieved Bs and Cs for the most part. My teachers claim that were I to do four A-levels (instead of six) I would achieve straight As and that my determination to get six A-levels may lower the final overall standard of my grades; I look forward, once I have learnt SEMMM, and Mind Mapping, to proving them wrong next year. Nevertheless, I have been prompted by my teachers to apply to either Oxford or Cambridge (by the way I would love to know which Cambridge college Edward

Hughes went to); if, as I suspect, I choose the former of the two, I may well sit the entrance exam this November in Psychology and Philosophy; either way, I have a great deal of Mind Mapping to do this holiday!

Many thanks.

*Matthew Dyke (Member No. 127)
Portsmouth*

Ed. Edward Hughes' college at Cambridge was Caius.

CHESS MEMORY

I have a question for Raymond Keene, the chess columnist: how do you memorize the various patterns, strategies and opening moves in chess? I have been told by an expert chess player that if I memorized patterns I could improve. Is this true? And are there other ways? Thanks.

*Grant Davison (Member No. 117)
California*

Another letter of interest from the 31 March 1990 issue of *New Scientist*.

BEAUTIFUL CHEMISTRY

I was interested in John Nicholson's article 'Our brilliant careers (Forum, 10 March), in which he discussed his accidental route into chemistry. I happened to read the article the day after hearing another chemist, Sir George Porter, on *Desert Island Discs*.

Having just retired after 40 years as a chemist, mostly in universities, but including a couple of years in industry, I find my experience much closer to that of Porter than of Nicholson. Like Porter, I was fascinated by the excitement of making crystals and colours, and bangs and 'stinks', and, as a boy, I spent all my pocket money on my laboratory, which was not in a bus in the garden as Porter's was. Nearly all the chemists I have met have shared this boyhood fascination with the subject.

Later, the intellectual challenge of trying to understand the double helix, or the ceramic superconductors, or giving a judgment on 'fusion in a test tube' has kept my interest alive; and the poetry is still there: as Hinshelwood wrote, 'To understand the secret of the rose's fragrance or the oak's tenacity, that is the purpose of chemistry'.

D.W. Davies, Shetland

NEXT ISSUE

B. F. Skinner's Last Interview

The founder of behaviourism, talks to *Synapsia* about the brain.

Beaten by Megabytes?

David Levy discusses developments in artificial intelligence.

Mind Warriors

Raymond Keene, O.B.E. gives a new perspective on the all time greats of chess.

Underwater, Out of This World

Meeting a dolphin.

Speed Reading

Has the World Champion read the next issue of *Synapsia* already?



THE IONIAN

WARRIORS OF THE MIND
A Quest for the Supreme Genius of
the Chess Board
Raymond Keene and Nathan Divinsky
Hardinge Simpole Publishing 1989
339 pages

Who was (or is) the greatest chess player of all time? Many chess authors have speculated on this question over the years and this book provides the answer. Even though it is difficult at best to compare Paul Morphy in 1858 with Gary Kasparov in 1988, mathematical models and computer analyses enable the authors to more definitively answer this long standing debate.

Warriors of the Mind provides much more than the definitive answer to a complex question. For the non-player, the book is a fascinating look at the history of chess. For the novice, there is much information towards becoming a better player. For those at the expert level, there are over 80 of the greatest games ever played as well as extracts from others, providing sophisticated strategy and inspiration to obtain new heights. Finally, for the Master, there is a deep look into the mental processes of many great minds.

The authors are both renowned in their own right. Grandmaster Raymond Keene has represented England in the Olympiads on eight occasions as well as winning the British Championship in 1971. He is the chess correspondent of the *Spectator*, *Times* and *Synapsia*; in 1985 was awarded the OBE for services to chess. Nathan Divinsky was a member of the Canadian Olympic team in 1954 and 1966, and wrote the classic *Around the Chess World in 80 Years*. As Professor of Mathematics at the University of British Columbia, he was responsible for the brilliant computer modelling that forms the basis for the book. Incidentally, he is also the reigning Canadian Contract Bridge Champion.

For Brain Club members with personal computers and object oriented programmes (such as C++ or ToolBook), the book provides hours of delightful information to supercharge your electronic adversary or explore the realms of creating a new and better computerized chess warrior. In addition, those interested in Mathematics will find an interesting section on the application of Calculus and Statistics.

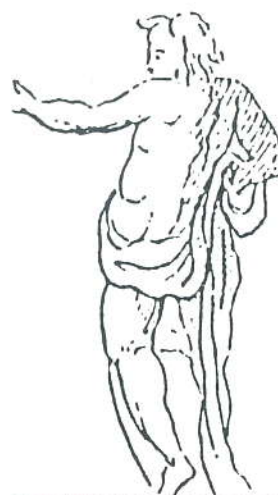
Warriors of the Mind is a valuable reference book, a joy to pick up as a thought stimulating tool, and a clear insight into some of the most brilliant minds of the last couple of centuries. The Ionian thanks Nathan Divinsky for providing us with this well-written book, and Raymond Keene for his insight and wonderful support of the Brain Club.

Paul H. Wilcox

In the next issue of Synapsia Raymond Keene tells who are the greatest of all time, and how they were selected.

Ed.

BOOK REVIEW COLUMN



WELL, WHAT DO YOU EXPECT AT YOUR AGE...?

by Jean M. Buzan

(Member No. 159)

The operative word is 'expect' and, especially when referring to the ageing brain/mind, false expectations often become self-fulfilling prophecies.

So many of us have believed the thought-to-be-true myths about our declining mental capacity as we age. Do *you* still think that our 'irreplaceable' brain cells die off daily throughout our lives? That our brain power diminishes as we age until we finally, if we live long enough, decline into 'senility'?

I did for many years, and if you do, join a club of millions.

It isn't that the 'experts' deliberately misled us – *they* really believed it too. The story goes that at a post-mortem years ago two young doctors remarked that, in general, older people's brains weighed a little less than those of younger subjects. "That accounts for their failing mental capacities" remarked one, and from this reasonable but unscientific deduction the myth became an accepted 'fact'.

The story may be apocryphal but it *is* true that the theory that we lose millions of cells on a continuing basis has been widely accepted for years, and to too great an extent still is.

The very recently discovered truth is far more palatable, and knowing it can change a person's whole life.

First, our minds/intellect/intelligence do not consist of just a limited number of brain 'cells' which die daily and cannot be renewed. The abilities of that incredible 3½ lb. computer in your head are produced by the number of interconnections made *between* those cells. And that number, dear brain-owner, is infinite in its growth potential!

So, you ask, what about the reduction in weight at post-mortems? I would guess that's merely due to the overall reduction in body fluid as



Jean Buzan, Canada's leading gerontologist examines the myths and truths about the ageing brain.

one ages physically. I would also guess that *this* is not inevitable either – after all, how many of us *really* drink eight glasses of water daily, as we are constantly exhorted to do?

There was another reason why this false belief was so widely accepted. When I.Q. testing first began, psychologists did studies, comparing older and younger groups, and 'proved' that the latter were far more intelligent. Q.E.D. – mental functioning declined with age.

These were called cross-sectional studies and were simply done. Two groups, one of older people and one of younger, were each given a time-limited I.Q. test. Since the younger always did better than the older groups, the conclusion was that a person's intellectual capacity deteriorated with age.

Then some bright psychologist tried removing the time limit. The older people then took a little longer *but*

had appreciably improved results, quite comparable with the younger. The extra time needed was accounted for by two facts – the older people were unfamiliar with the types of tests which were commonplace to the younger; and the older people's brains contained more years of experience and therefore had more information to process when considering the questions.

Eventually psychologists devised the longitudinal type of test where they tested a person annually for many years, comparing the results of the *same people* against themselves. And guess what – in many ways they *improved* over the years.

Think (with your brain!) what this exciting new information means. Always with the proviso that you *believe* this information and continue to *stimulate* your brain, it really *is* true that "you're not getting older, you're getting better".

ANNOUNCING THE FOURTH INTERNATIONAL CONFERENCE OF



SOCIETY FOR EFFECTIVE AFFECTIVE LEARNING

on Friday 22nd, Saturday 23rd and Sunday 24th March 1991
at the University of Reading

PATHWAYS TO POTENTIAL

The Conference will cover the latest developments in Accelerated Learning, Suggestopedia, Neuro Linguistic Programming, Psychosynthesis, Yoga, Autogenic Training, Alexander Technique and other methods designed to help learners, trainers and teachers achieve their full potential. Leading experts from East and West will conduct workshops. The Conference will be of particular interest to trainers from industry, teachers of languages and other subjects, and individuals wishing to develop Creativity, Study Skills, Interpersonal and Presentation Skills. It will be particularly helpful to those engaged in discovering and developing potential in children regarded as handicapped or slow learners.

Speakers, from East and West, include:

BAILEY Kathey, from Northampton, U.K..

A trainer in communication skills who will be running a workshop entitled "Using the right hand side of the brain in business reading and writing".

BAUER Dr. Rupprecht, from the Universität Gesamthochschule, Essen. Author of the book "Suggestopedia" and of numerous articles on Suggestopedia.

BROOKS Stephen, from British Hypnosis Research. A specialist in the application of NLP to improve problem solving and developing new thinking strategies in Industry. His workshop will be entitled "The Application of Neuro-linguistic Programming (NLP) in Industry".

BURDEN Dr. Robert, Director of the Centre of Applied Psychology, University of Exeter, co-worker with Professor Reuven Feuerstein on Structural Cognitive Modifiability, a method which has achieved apparently miraculous success in raising the intelligence of backward children.

CHITTANANDA Pat, Chairperson of the British Wheel of Yoga and Alexander Technique teacher. Her workshop will be on the Alexander Technique.

DAUNCEY Guy, of Vancouver, Canada, author of "After the Crash".

DIAMOND Dr. Marion, Anatomy/Physiology Professor at the University of California (Berkeley) and author of two books and more than a hundred articles on Neuro Science.

EVANS Roger, London Director of Creative Learning Consultants and author of the book "The Creative Manager".

FLAK Micheline, of R.Y.E. (Research on Yoga in Education), Paris. A teacher of yoga and of English and creator of a method of introducing yoga into the classroom to help children concentrate and learn better.

GATEVA Dr. Evelina, Centre of Suggestology and Development of the Personality, Sofia University, Bulgaria - Teacher of Languages by Suggestopedia.

GOLD Lonny of Trajectoires Associees, Paris, a highly experienced Suggestopedic trainer, President of the National Council of Suggestopedia, France. He will give a workshop entitled "Suggestopedia: Teaching through Perception and Intuition".

HERON John, Founder of the Human Potential Research Project - a pioneer centre for experiential learning and enquiry at the University of Surrey. His workshop will be entitled "Four Powers in the pyramid of learning: an exploration of the empowering relations between four kinds of learning - emotional, imaginal, conceptual and practical".

HOBBS Paul Training and Development Executive of MK Electric will demonstrate how Industry can use the full range of Accelerated Learning techniques in adult training. The workshops conducted by Kathey Bailey, David Pedley and Stephen Brooks will go into more depth and reinforce some of the points made in Paul's session.

HOOPER Grethe, Suggestopedic EFL teacher from Florence, Italy who will give a workshop entitled "Facilitating a Holistic Response".

HOW Ludi - of Malmesbury, Wiltshire, Practitioner in Stress Recognition and Management, executive member of the British Association for Autogenic Training and Therapy. Her workshop will introduce ways in which AT can increase self confidence and clear pathways to an individual's potential resources.

KITAIGORODSKAJA Professor Galina, University of Moscow - Director of "Intensive" (Suggestopedic) Language Teaching.

KUSHLIK Dr. Albert, Clinical Assistant Psychiatrist at Lymington Psychiatric Day Hospital and at St Ebbas' Hospital, Epsom Unit for Challenging Behaviours where he now does cognitive psychotherapy and staff support. The title of his workshop will be "Enjoying Working with People who have Severe Challenging Behaviour".

LOZANOV Dr. Georgi, Centre of Suggestology and Development of the Personality, Sofia University, Bulgaria, Creator of Suggestopedia.

MERRITT Stephanie, of San Diego, USA. Educator, Consultant and internationally-known lecturer and author in the field of Accelerated Learning, will give a workshop on "Learning with Music and Imagery".

MILLER Alison, of Synergistic Learning, USA, an internationally recognised teacher, trainer, consultant and writer, who has recently been teaching by Suggestopedia in Japan. Her workshop which will use music, active participation and hand puppets will be entitled "Subtly Powerful".

PALMER Dr. Lyelle, President of SALT (Society for Accelerative Learning and Teaching), Winona State University, Minnesota, USA, an expert in the field of infant and early childhood neuro-stimulation in addition to his many specialities of Learning Disabilities and Emotional Disabilities. He will give a presentation on "The World's Greatest Kindergarten Results".

PARDO Enrique, France, Director of Pantheatre, an artistic association, the aim of which is to carry out theatrical and cultural research.

PEDLEY David of Wessex Training Services, Dorset will give a workshop entitled "Group Think". This will introduce a process of helping managers and supervisors to consider the mental blocks to be overcome when solving a problem within a group.

POSTLE Dennis, Richmond, Surrey Author of "The Mind Gymnasium" associate facilitator with the Human Potential Resources Project at the University of Surrey, Guildford. His workshop will be entitled "Emotional Competence - a Luxury or a Professional Obligation?".

RATELBAND Emile, of Holland a successful businessman who has been especially selected by Anthony Robbins, author of "Unlimited Power", to conduct his personal development seminars throughout Europe.

ROSE Colin, M.D. of Accelerated Learning Systems, U.K., producers of home study language courses.

SPINOLA Roland, of the Herrmann Institut, W Germany, who has run a successful "New Learning" course for IBM, Germany, using Suggestopedic techniques to teach technical subjects.

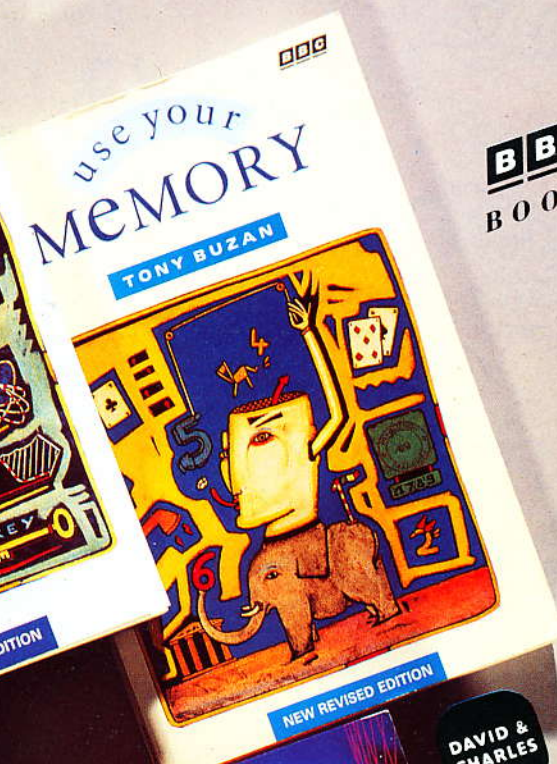
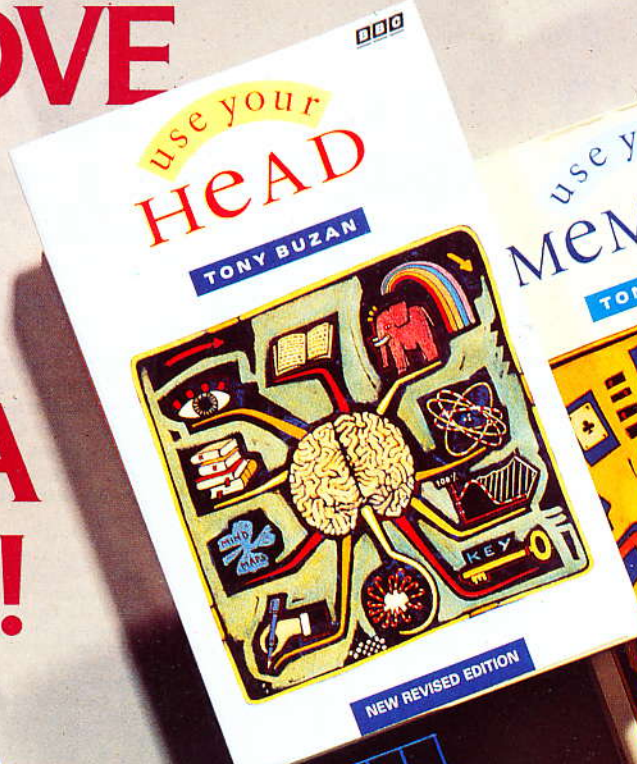
WAGNER Hartmut, Director of SKILL Training in Heidelberg, W Germany, a group offering seminars for Creative Learning and Teaching.

WATKINS SEYMOUR Eileen, is American born and London based. She is co-founder of the first European training centre for Neuro-Linguistic Programming, which was birthed in London in the early 80's. Eileen specializes in dealing with the structure and removal of blocks to learning, performance and general well being. In this workshop she will focus on the process of restructuring and rebalancing toward a coherent structure.

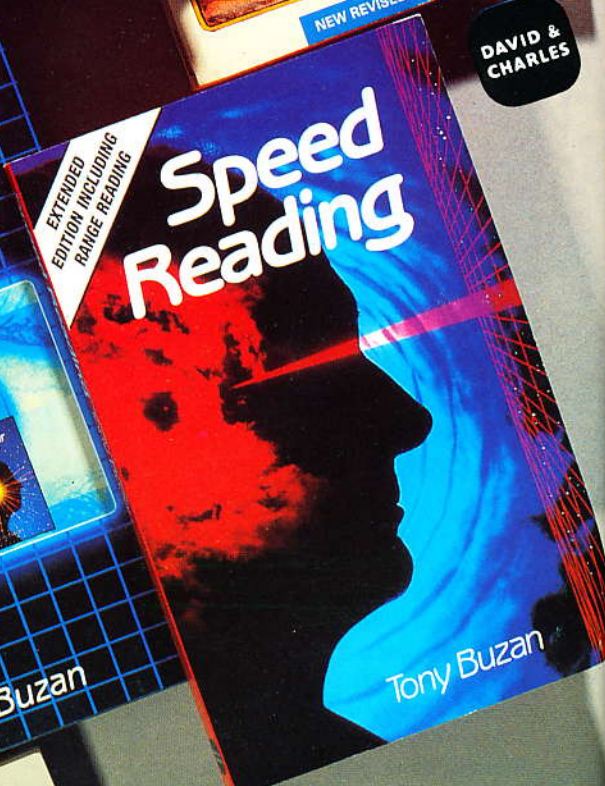
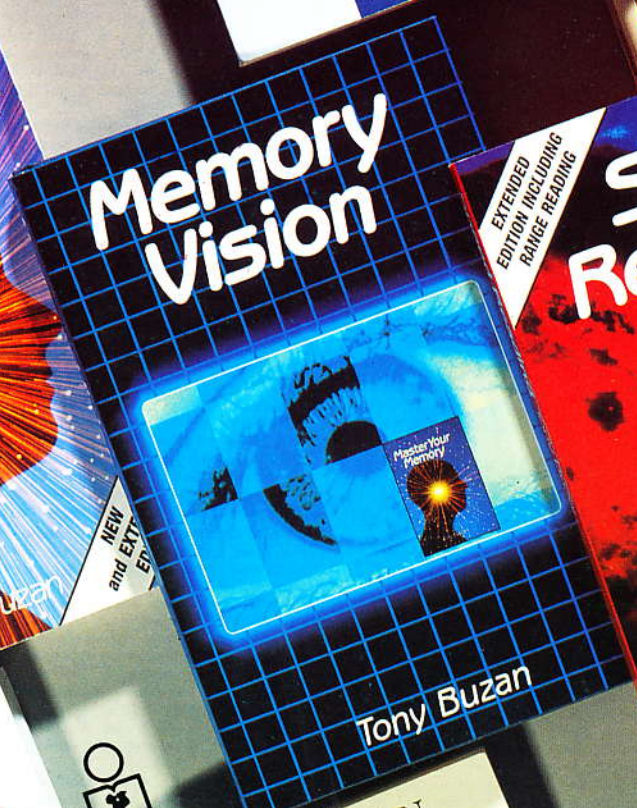
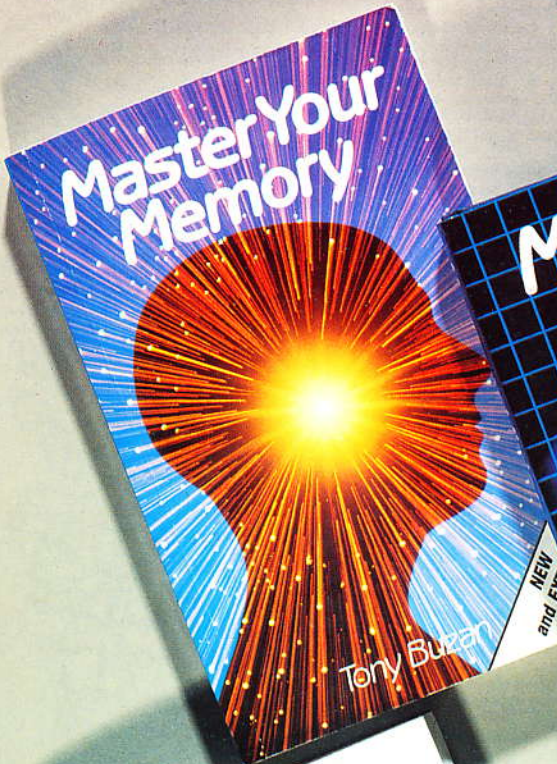
WHITMORE Lady Diana, Director of the Trust for Psychosynthesis and Education, London, author of "Psychosynthesis in Education".

For full conference programme and enrolment form, apply to
The Chairman, S.E.A.L., Forge House, Kemble, Glos. GL7 6AD

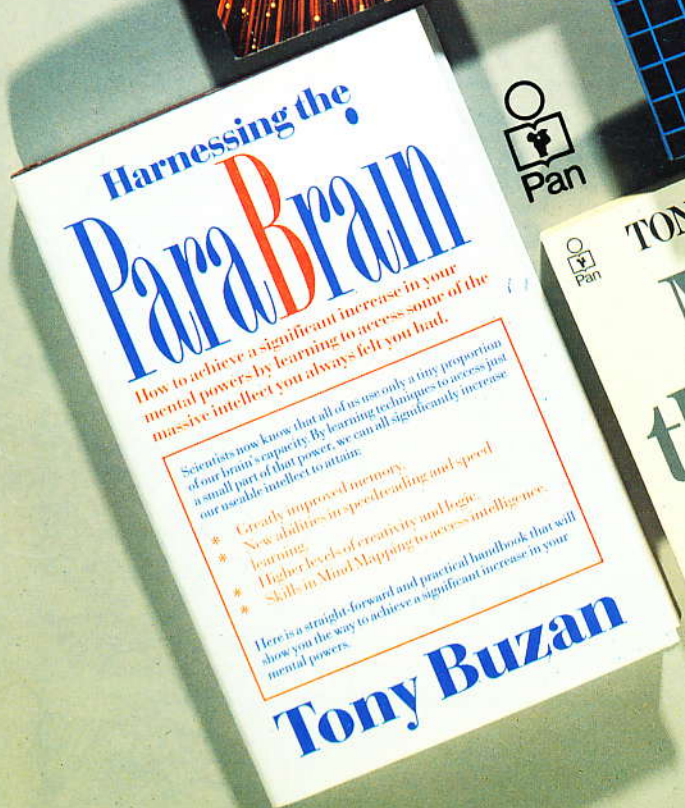
IMPROVE YOUR MIND WITH A BOOK!



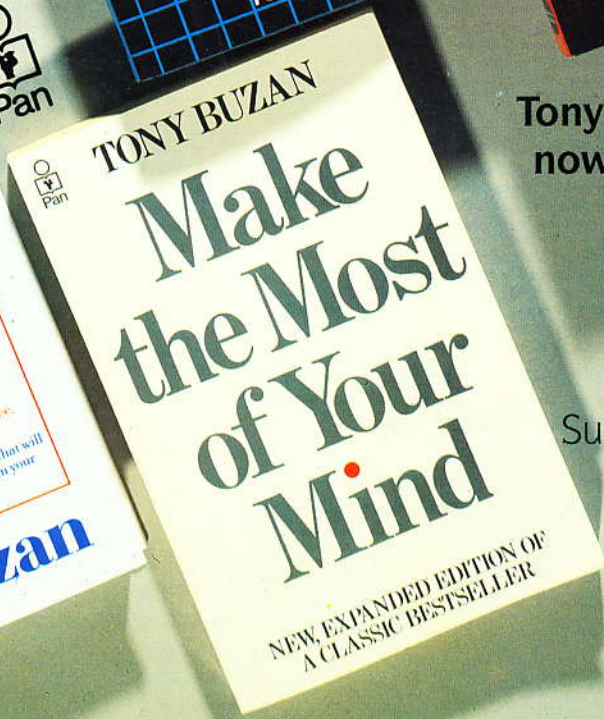
BBC
BOOK



DAVID & CHARLES



Pan



Tony Buzan's bestseller
now completely revised
and updated

all obtainable from
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