ARISTO TACOMA
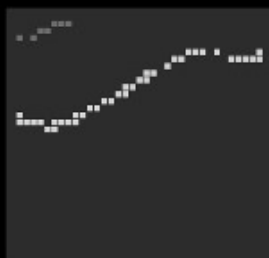
ART OF THINKING, VOL. iii:

915 PMN PATTERN MATCHING


```
Quantity core patterns:          30
This is cpattern number:         13


qty cards: 1223*qty div 232, plus 1.
how many patterns save to L1:
how many patterns load from L1: 30
result of last 'arrow-right':     MATCH
ctr-S save core patterns, ctr-L load. Max 100.
arrow-up/beneath: select core, arrow-right apply to photo
ENTER recalc threshold value, now:              3
f1 toggle bright/dark mouse   f4 prev img    f5 next img
f10 erasemode mouse on/off    <space> exit
```

Aristo Tacoma

Art of Thinking
Vol. 3

G15 PMN PATTERN MATCHING

SPACE FOR YOUR OWN NOTES

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CHAPTER 1: FCM IN AN ORGANIC WORLD

Computers are our friends, in making society tick: they
are dependable and handle routine tasks eminently well.
  When we seek to expand their range of action a little
bit, so that not just routine tasks can be handled, we
must also expand our programming techniques.
  On the one hand, programmers deal with numbers, and
often these numbers boil down to zeroes and ones. For a
PC to do anything, that's the level we have got to sort
to. And, obviously, as soon as we put the PC at work to
steer a robot with some mechanical moving things about it,
and one or more cameras to orient itself, we are faced
with the fact that the world is chock-full of information
and much of this information doesn't lend itself readily
to any 'boiling-down' process.
  And, as philosophers, we may find a peace of mind in
noticing just this. Here is where we human beings come in,
with our living, perceptive minds, our intuitive
intelligence, our creative leaps of insight, our gut
instinct for doing things right, and our applications of
a broad level of ethical concerns. The machines, we
surmise, are left standing in wonder--if ever they do have
any capacity to wonder--as we humans make up the living
core of society.

And indeed, while, in some mechanistic worldviews popular amongst those who hope that spirituality is void of rational content--dominant, for instance, in the late 20th century--such a view of an essential distinction between living minds and man-made machines is taken lightly--we can, and do, here, in these volumes argue that human minds are forever beyond the machine. The machine may and does have similarities, it may be cleverly made so as to to cover up its machine-like-ness, but anything manmade is finite in a way that a natural living human being is not.

That is more than a pleasant dash of wishful thinking: there is an open door, through what this author calls 'q-fields', to leave the area of the machine-like, the area of cause-and-effect, when we consider living human minds. This is not merely about going from digital computing to some fancied idea about 'quantum computing'-- which is a presumptious term, as if humans are able to control the quantum domain--but it is being realistic in seeing that the mind is a structure made of a more subtle type of substance than mere matter and its energy.

The human brain, while it has machine-like features, also has the capacity to interact with this more subtle form of substance or energy--and it is here art and meditation comes in to heighten this unique capacity of the human mind. Beauty, the experience of beauty, is biologically an experience of coherence, and coherence of a natural kind is the doorway between manifest matter as of the human mind and body, and the more subtle aspect of life that make life essentially something more than just matter; indeed more than the machine.

In this picture, we are of course free to make machines; and the machines can be enjoyable both as seen from the point of view of their construction, and of course also in what they can do for us.

And so we push buttons here, and buttons there, and expect robots and computers to help us and indeed they do help us. They help us where it is possible to delineate some kind of middle ground between the fuzzy world of life and the mechanical, digital world of zeroes and ones.

This middle ground has, in the jargon of G15 PMN, a name, and that name is, of course, FCM. FCM, or First-Hand

Computerized Mentality, is the general label or brand we put on our efforts to express something of our living mentality in the form of programs so as to help for instance a robot in doing a meaningful task in society.

More concretely, FCM is, in G15 PMN, also the set of routines, used, for instance, in the G15 PMN Spreadsheet, in which what we may loosely call 'nodes' can be, in one or another, hooked up to one another and mimick some form of pattern matching and task execution, perhaps with some levels, some priorities, some sorting.

The more we do robotic programming, the more we will use FCM, and the more FCM programs we have lying about, the more tempting it is to make yet more of them. The trouble is not so much where to begin as how easily we can hold back in the beginning, so that we don't overuse all the program technicality which is part of the FCM programming framework just to get the simplest and most essential pattern recognition up and running.

In shaping this volume 3, I have vouched for a sort of middle-take on this: we begin by doing some pattern matching of a most elementary form of the types of photos, the socalled GEM images, that are already a standard part of G15 PMN. As we build up some apps to provide a little bit 'numerical' and perhaps 'keyword' sort of 'comment' on some of these images, we can attach some of these functions into a spreadsheet and in that way open up for more use of the FCM later on. Initially, it is too simple a task for the whole FCM program framework to be used, but by sort of 'running' the functions from within the spreadsheet, we are warming up for more advanced FCM use later on, and also expanding our understanding of just how versatile the G15 PMN FCM Spreadsheet is.

The idea of FCM fits perfectly well with such an approach, because FCM is not identifiable with any particular set of algorithms: it is, most generally, a concept we invoke to speak of just what our intentions with some programs are. It is also a concept that has been shaped in conscious contrast to the pretentious notion of "artificial intelligence", which, alongside other such notions such as "machine learning" and "automated thinking" are emblems of a shallow mind, uneducated in the finer aspects of realistic, rational worldviews, in which

the organic is seen as fundamental in this universe.
Whereas such as "AI" is a programme motivated by hatred of
spirituality and natural mind, "FCM" is a practical and
realistic concept, and speaks of the relationship of the
program, and the data it uses, with the programmer, about
in the same way as one can speak of the relationship
between a good book and the author or authors of the book.

CHAPTER 2: OUR VERY GENTLE BEGINNING WITH FCM

We will begin by constructing what may be called a 'core
pattern' sort of feature detection: it will not be an
absolute sort of analysis of an image, but what we can
call a more 'tentative' analysis. To fully analyse an
image even if it consists of only 500x500 pixels each of
some 64 greentones--even in terms of just one feature such
as 'are there any parallel lines in it'--can take as much
time as we like. If you think of it, even a single image
can be analysed for hours and hours, or even weeks, years,
without us deemining the analysis 'complete'. So we have
got to sort of do a bit of 'shopping' into the image, use
the RFFG function--the relatively free fluctuation
generator--and see if we can get something out of an image
without too much effort. This may not be very precise, but
if we can get it relatively fast, and do many such
different 'shoppings' into each image--then the range of
the whole set of results of such 'shoppings' may begin to
give us a set of numbers that can actually tell something
fairly meaningful about each image. The error range may be
big but that can be tuned later on for particular
purposes. As long as the error range is not so big it all
appears to be a mere random set of numbers, we are
beginning to make a program that can do something like
pattern matching in a practical sense.
   In constructing G15 PMN both as Central Processing Unit

idea, and as a quintessential form of Personal Computer,
or PC, I have constantly affirmed the importance, for
good and meaningful computer work, that the canvas, or
dance stage, or sketchbook--or whatever metaphor we
prefer for the computer--is concrete and has visible and
experiencable limits, both in its space- and time
features. Thus a program does not run infinitely fast; it
does not presume infinitely much RAM; nor does it presume
an environment with infinite resolution, infinite hard
disk capacity, infinite speed in communication with other
computers, or indeed anything 'infinite' at all. What's
more, the whole concept of the 'infinite', as (way too)
often invoked in 20th century computing and mathematically
influenced thinking, is to be considered a 'security risk'
for the integrity of the human mind unless handled more
or less as we would handle a radioactive material.

  Instead, the personal computer is about embracing
limits, and these limits are not so as to be apologetic
when the PC merely have features in common with analog
reality rather than features that appear to blend in or--
as "AI"-mis-informed thinkers would like to have it--
"augment" reality. The reality that people of a certain
slant of mechanical worldview would like to "augment" or
"increase" or "enhance" is a reality that is a victim of
their poor perception of reality, filtered by the
energy-depleting glasses of shallow materialism and
atheism; these people, uneducated in art, skillful in
front of a cabinet with some electronics in it, think that
they can improve on what's around them; but they are doing
little but engaging in a futile form of self-therapy,
which hopefully impresses none but themselves.

Indeed, a PC should not look too much like reality:
because we want a society with people who are adequately
un-impressed by computers that they keep computers in
check, and do not seek to mingle their bodies with chips
and micro-implants nor seek to imitate the machine in
their concept of mind, body and sexuality. That is why the
G15 PMN PC concept involves a green screen of 1024x768
pixels, it involves a keyboard not of infinitely many keys
nor are these keys invisible or lingering inside some
wearable microelectronics, but it is a visible A to Z

English keyboard with the Ascii 7-bit character keyset.
There is a mouse--not a touchpad hovering in the air or
through EEG electrodes to the scalp--but a real mouse
pointer device beside the PC, meant to be an alternative
source of input when the digital, discrete nature of the
keys should have supplemented with a more gradual X/Y free
movement-within-a-range sort of movement, with two
buttons. The PC can do some millions of loops with some
simple arithmetic each second--not billions nor trillions
nor quintzillions--and there is no goal that the PC shall
do more than some millions. The hard disk, or set of
hard disks--which are labelled from C to L, can each hold
cards of 232 big numbers--though we often just use them
for small numbers, even as small as zeroes and ones,
rather than the whole two billion signed range--and each
disk can hold a little more than two million such cards.
   These limits, and other such limits, make up the shape
and pattern and indeed also personalness of the Personal
Computer. Take them away and the computer is but a
fleeting--and unnecessary--thought.

When we have images, photos taken e.g. from a camera,
shown on the screen of such a computer, we want the photos
to be adding to the quality of life, but not so realistic
that they obscure the contrast between the machine and
everything else around it. A little experimentation has
shown that there is a huge esthetical and enjoyment value
in having libraries of 500x500 pixel-sized photos with 64
greentones: here, every sort of image of reality can be
represented, while it is always entirely clear to the
perceiving mind that this is indeed a 're-presentation'
and not reality in itself. So it keeps the mind alive to
reality, there is no element of secretely trying to
hypnotise the mind; but it also helps the artist in us to
see how much beauty there is, and can be, in reality. 500
times 500 tiny light dots, placed near one another on the
screen and allowed to vary between a near full black and a
very bright green, allows worlds upon worlds to be hinted
at, whether photographed or somehow worked on or even
generated by the computer. Indeed, it is not to much to
say that there is a 'sense of infinity' (in a real sense,
not the phony sense of its misuse in a mechanical world-

view) associated with 500x500 greentone images, what we
also call GEM photos, in a G15 PMN context.

500x500 may not sound much: but it is much. We are
speaking of a quarter of a million light dots. We can, by
showing eg up to around 8 such pr second, and introduce a
varied element of pause between one such showing and the
next, get a sense of movement--not the illusory kind of
'video' that aims at blurring over the fact that the
computer movement on the screen is in fact merely showing
a rapid succession of photos--but a kind of video that is
also a series of still photos. The latter kind of video,
using such as 8 Hertz, or photos pr second--on the average
--instead of drolling on a steady stream of 25 Hertz or
more--does not lull the mind into seeing what goes on at
the computer screen as anything such as real movement. So
when we do such as we call G15VID, it is not the video
made by people dedicated to the worldview of imitation of
life by mechanical, causal patterns; it is a sense of
expansion of the still photo towards something that hints
of movement without any element of trying to fool the
observer. This is relevant to mention here, because when
we seek to do an element of pattern matching over images,
for instance by making functions which will also be
inside robots, we must think through the speed requirement
for the robotic processing of input from its devices and
figure out whether we have to optimize a function or two
so that, instead of having the PC to spend some seconds on
analyzing an image, it cuts time to a fraction of a
second.
   In this volume, however, we connect chiefly to one photo
at a time, but we keep in mind that we want the Personal
Computer, with all its limitation, to spend a moderate
time with each photo, and in which we can, if we wish,
later on optimize a program written in G15 PMN so that (at
least) a core part of it is written in pure G15 assembly.

Let us think about the typical GEM photo, of 500 x 500, or
250,000 pixels. How are we going to make any connection to
any part of it without having to have giant loops through
all these pixels? As hinted on earlier in this volume, we
must 'shop around' in the photo rather than try to do

things systematically and completely; and we must be willing to engage in some RFFG, or use of Relatively Free Fluctuation Generator. That is, by the way, not wholly unlike how our own awareness of circumstances might work: we are sometimes more aware than at other times; we sometimes pick up some features better than other features --and there does seem to be a degree of coincidence about just what we focus on in any given moment. That is part of the living nature of perception; and we should not be against bringing it into the core of any FCM programming we do, as long as we get something fairly meaningful and useful as a result, when this is done in correct intensities and with suitable understanding around it.

   So that is one point: let's bring in RFFG.

   The naturally connected point is this: we must decide on some kind of selection of the image each time--not so small selection that it becomes without a relationship with the content of the photo (or whatever it is), but also not so big selection that it takes too much PC time to loop through it.

   The two ways to save time in having a matrix of 250,000 numbers each with 64 different values are to have a smaller matrix and/or a smaller set of values.

   So far, what we say is perfectly logical. In actually deciding on just what smaller matrix, and just how to extract a smaller set of values than the 64 tones, we must call on leaps of intuition. We cannot possibly try out every alternative: we must intuit a correct design, and do the best we can with this intuition.

   The approach of this author, when facing such design intuition, is to frame the questions as clearly as can be done, and, while being aware that the questions have been put, do other things for a while. On occasion, I will think about the questions--perhaps new, different questions arise, perhaps some experiments can be done to clarify more options, or to show more realistically what it is all about--and I will again let it lie. It will linger in the area of the mind which is near (though not wholly in) what we call 'the subconscious'.

   In this regard, going for walks are essential, especially when it is about getting the first concrete fruits of this questioning-process. The walking rhythm,

the change of scenery and general sense of health and
well-being that a good walk in good weather can be
associated with, allows questions to be formalated as if
for the first time and with an ease of listening in to
what presents itself as particularly salient, beautiful
and elegant.

   Put simply, I arrived at the idea of working with 'core
patterns' of some 35 times 35 pixels, and not just any
pixels, but of three types: 0, 1, and 2. In the case of
pixel type zero, I associated the word 'transparency'--
I'll explain what I mean by it here. In the case of pixel
type one, I associated the idea of a 'dark' pixel. In the
case of pixel type two, I associated the idea of a 'light'
pixel.

   I went on to visualize a 'core pattern maker' program,
in which one can use the mouse to draw up such 35x35
mini-images: each place the mouse is pressed, has a 'dark'
or a 'light' pixel', or no pixel at all (ie, black pixel,
the green tone 0). Perhaps you want to explore whether a
certain type of curve exists in a 500x500 photo. So you
draw a curve in terms of some bright pixels. You put a
curve beside the curve in terms of darker pixels, and
leave the rest of the 35x35 minimatrix untouched. The rest
of it is 'transparent', right? It doesn't say either this
way nor that way. The dark vs. bright pixel can obviously
vary from one 500x500 photo to the next. And I landed on
the following idea, or approach: let us begin, once a
500x500 photo is presented, to 'shop around' for an
average pixel value, by doing some RFFG selections of a
bunch of relatively random X, Y positions in the image
and adding them up and dividing on the quantity we got.
Say, a few dozen. If this average produces no result, we
can do it again.

   That, then, became one part of the proposed 'core
pattern maker' program: let us bring in a sample photo,
any one of some hundreds, let's say--and each time we
press the ENTER button, we calculate an average pixel
value.

   The 35x35 core patterns, of which I eventually decided
that I wanted--as an initial design idea, at least--fifty,
will be constructed around the idea of connecting to this
average so that when the pixel value is 1, the average

value ought to be higher than that pixel, and when the
pixel value is 2, it ought to be at least just that
average. Right? So we store some bright dots and some dark
dots but just how these are applied to each photo depends
on what calculation of average brightness we find in the
photo. In some photos, the average may be highly skewed,
for instance when most of the photo is dominated by one
type of brightness but the essential part of the photo,
in terms of what it refers to, is dominated by a tiny set
of pixels with another type of brightness. However that is
life: this is an approximate type of approach, alive to
the fuzziness of life.

In the upcoming chapter, a very very long one, I will go
through the program that unfolded over many days, and
which I finished a successful series of experiments with
just days before starting out on writing this volume. My
objective in presenting the whole of the 'core pattern
maker' app, which I have given the significant app number
5551234 (significant because '555' is often used with apps
with FCM or robotics), is partly to show how a completely
new concept can be woven straight on top of the Third
Foundation G15 PMN set of functions, partly to document
what I think is an important core type of program for FCM
robotics, and partly to be able to relate my exact
thoughts while making just this program while they are
still fresh in memory and not an after-construct inserted
to fill out the space in between the code passages.

To motivate the learning of this program, here is the
briefest possible outline of how this program can be used
in a pattern matching process that points towards
practical pattern matching for instance as part of what it
takes to drive a robot using the FCM framework in full:
  By using the 'core pattern maker' app in making a
meaningful varied set of 35x35 'core patterns', we can
proceed to apply this whole set--of which I decided, by
intuition, on 50 (as I've already said)--to a set of
photos. There are various ways in which one can measure
the results of a meeting between a photo and such 35x35
core patterns as indicated above. What I have decided on
is that I want a simple 'yes/no' answer in each such

meeting: did we, by a little shopping around in the photo, in fact encounter a full match with such a matrix--in which the transparent (zero) bits were ignored, and all the bright dots corresponded to the brighter parts of the part of the photo, and all the nonbright dots corresponded to darker parts of the photo? If yes, there is a '1', if not, there is a '0'; and with 50 core patterns, we have, then, 50 bits that can say something about the photo. In changing the average, and/or in redoing the RFFG-process of shopping into the photo, we might typically get some variation of just which 50 bits. With luck, with good design, there may be a good deal of consistency.

50 bits means that we have a way to go from one 500x500 GEM photo into any of 2x2x2..2x2x2 possibilities. 32 bits is in the nature of two billion, and we have here almost twenty bits more. So, in short, we have a way to 'sort' photos, fairly speedily, into very many billions of 'types'.

In order to get this process to have some meaningful words about it--rather than just being a question of digit-series of 50 zeroes or ones--we will make an app, following up on the 'core pattern maker' app, in which we can type in a set of keywords associated with each image that we run through this process with the same set of 50 core patterns. This will be an entrainment app, as we can call it (carefully avoiding any human mind word such as 'train' or 'learning').

The test of successful entrainment is that we can take a wholly different set of photos and get the program to come up with not-too-wrong keywords in encountering these. And so this is the third type of app made in connection to this volume. In this third type of app we find an easy extension of the G15 PMN FCM Spreadsheet so that it can call on the results of the entrainments created with the previous apps. The calculation methods in the spreadsheet are be supplemented with some new words that retrieve a GEM photo, shows it and also matches on it, sorting out what seems to be the most relevant selections of keywords from the entrainment process.

In this retrieval, it is the normal case that a photo simply won't match entirely identical with the 50 bits found in our entrainment series of perhaps just a couple

of hundred photos. In the case of a robot going to function in a particular environment, part of the approach of the entrainment would be to have a very good and varied selection of photos that is particularly relevant for just this environment; and to be sure that the keywords are practically useful for the FCM tasks that we will put the robot to carry out.

Here, we are more interested in getting a sense of pattern matching on a meaning level--a 'semantic' level, and it is not so critical if the keywords produced are off for a very large number of photos, as long as we see that we are having a program, or set of programs rather, that can be tuned in the right direction given enough work. All the programs made in connection with this volume are permanently available as G15 PMN apps with full source and some of them have example data, including, of course, the 50 core patterns, so you can see for yourself that we have meaningful enough results.

In any case, task of the spreadsheet will be to not just retrieve the 'entrained' photos and their 50 bits of info and their relevant keywords, but also to make a sorted list of what seems to be the best matches. We have a fast, elegant, simple, first-hand sorting mechanism built into the G15 PMN Third Foundation, and that is the bubble sort process (which, we have argued, is to be preferred over intricate sorting techniques whenever it makes sense). The bubble sort will be used by the FCM program to select the uppermost matches for any new photo, with the entrained series of bits with their keywords.

In short, we have three steps to getting towards some elementary pattern matching in this volume:

Step 1, the core pattern maker with the 35 x 35 matrices is documented in detail here (a screen copy of trying it out is shown on the cover of this volume).

Step 2, once 50 core patterns are stored, an entrainment app can store the 50 bits together with a limited number of keywords for a selection of photos. This entrainment app will also be discussed here, although not with the same level of detail, because the elementary program design is all in step 1 with the 35x35 matrices.

Step 3, functions from the entrainment app, coupled with a calling on bubble sort, are integrated with the G15 PMN

FCM Spreadsheet, so that we can use this spreadsheet to check out how we are doing with our pattern matching. We will deepen the use of such 'patmatsheets', or 'pattern matching spreadsheets' with the next volume, in which we make the PC act on the results of the pattern matching.

CHAPTER 3: THE CORE PATTERN MAKER PROGRAM

As a G15 PMN programmer, you know that there are just a
few lines, and just a few characters on those few lines,
on each "program card". The card may have two columns,
and we're speaking of eight lines, maximum, in each of the
two columns. Typically, there's a lot of space on a card.
  When then a program, like this one, has less than 150
cards in total, and nevertheless does something really
important, and does it well, and in a way that is a
pleasure to interact with for the human being and the
programmer, we have to say that G15 PMN is a really good
programming language; and that we have here a program that
is worth studying, worth learning something from, worth
digging into.
  For this program allows you to browse through a whole
series of GEM photos. Each time you press a function key,
it goes from one to the next photo. Each time, it not only
displays the photo, but also unpacks it carefully to a
250,000 size matrix, and provides an average over the
greentone values used in it. It allows you to load up to a
hundred core patterns--and modify them--or create them
from scratch--and save them back. For each such core

pattern, it allows you to check out, by a click on the right-arrow key, whether it can easily find an example of the core pattern in the photo. And it does so without getting deep into any machine code: it simply uses G15 PMN at the normal level.

"SCANCPATHERE" is short for, 'scan for a core pattern at this position, x, y, here'.

The next function, SCANFORCPAT, is short for, 'scan for a core pattern', and it does nothing except calling SCANCPATHERE for up to 32 times at a variety of RFFG ('relatively free fluctuation generated') positions. As soon as it locates a complete match with the core pattern, the SCANCPATHERE program exits, telling the function still higher up that, yes, indeed there was a match. In case it finds no match, it goes on and on up until it reaches its 32 times, and exits with the flag basis (zero).

Why 32 times? Again, that is a design intuition. It works out relatively fast when we work with one core pattern relative to one GEM photo, even without using any G15 assembly optimalization. You press the right-arrow button on the keyboard, and within a brief moment it has either reported 'MATCH' or given the line of hyphens on screen, '_____' that indicates no match.

In case you suspect there is something about how it calculated the average greentone value, you can press ENTER in the program and it will calculate a new value; then you can press the right-arrow button once again and see if it has better match this time.

In case of a match, it will show, in a small square bit underneath the core pattern, how that part of the image looks that matches with the core pattern. It will also show a sort of 'U' clip symbol on top of just that part of the image, so you see where it got it from. To cleanse the image of such 'clips', you can reload it eg by a press on F5 ('next image') then a press on F4 ('previous image').

The average greentone is of course used much in the program and so it at all times stored in a 'global variable' (ie, a variable available to all this program), and it is called ATHRESHOLD--'a greentone threshold value'.

In order to design a core pattern, you press the mouse

on top of the core pattern area. The mode can be in the
mode of drawing bright pixels, in the mode of drawing
dark pixels, or in the over-riding mode of 'making pixels'
versus 'erasing pixels'.

  When you press F1 you switch between bright and dark
pixels. When you press F10 you switch the mouse from
making pixels to removing pixels and back. The removing of
pixels is what you choose when you have 'drawn too much',
and you wish it to have a transparent region instead of
having to have a bright or a dark pixel in a certain spot
in the 35x35 core pattern.

  As you press F10 again, it switches back to the drawing
mode it was last in, whether that was bright or dark
pixel drawing. These core patterns are saved by the
program to the L-disk, starting at card 1, and in a
leisurely way, with each of the 1225 = 35 times 35
numbers spread out over the cards, so that there are 232
such numbers in each card. To save 50 core patterns, in
other words, is a question of 50 x 1225 divided by 232
plus one (the plus one is that it will have room for the
remainder after the whole number division). That's 265
cards--starting with card L1 in this case.

  Each 500x500 GEM photo usually occupies (in its first-
hand fairly packed form) 220 cards. These are here
assumed to be stored from card K1 and upwards, so the
image number 2 is at card K221, image number 3 is at card
K441 and so on.

  If you are in a hurry to get photos into the G15 PC, you
may look up any routine associated with G15VID (because
there are usually ways associated with VID routines to
handle a series of photos fast). Or, you can use the in-
built series of photos in the G15 platform, which is used
when GEM (and, for a portion of these, when B9edit) starts
up, and which start at D:90000. These are pleasant,
healthy, beautiful photos, gathered at a very early stage
when the platform was worked out--not systematic at all,
and quite characterised by just what was most easily
available at the time--but these GEM photos have proven to
lend themselves to encourage fruitful, coherent
visualization over the whole range of beautiful ideas
needed to make any sort of program or product with the
G15 PMN platform. Some of them are sexual, some of them

merely beautiful; some indicates life in the youngest
form, sometimes full of dance, while others show other
aspects of life.

  In building up the core patterns, a wholly other set of
photos were used: and part of the reason is that we want
to use the core photos sparingly; but also so that when
you check the result of building these core patterns so as
to associate some keywords with the what they match on,
you can use any collection of photos you like--including
those at D:90000--trusting that this is a different set of
photos than those first entrained into the example data
sets included with the pattern matching app.

  If you load in the app 5551234 and play with it, having
read these comments on how the program is supposed to be
used, you have a good starting-point for studying the
code. In the following listing, I have followed the
principle of only inserting comments when the comments
inside the program card itself (preceeded by a | bar) are
not sufficient to describe the function or the data on the
card, and also that the card is essential to the core
pattern making app, rather than a typical sort of card
found (and presumably documented) with a range of other
sorts of programs (eg., inside the Third Foundation or on
other programs that build directly, like this one, on the
Third Foundation). Here is the whole core pattern maker
program. The 50 core patterns I suggest as fruitful to use
for many or most pattern matching situations are included
in the pattern matching entrainment app as described in a
later chapter in this volume. These have of course been
designed with the following program:


```
<i1>
|core pattern  |k1,k221 etc:
|maker for g15 |photos
|fcm pattern   |l1: core
|matching;     |patterns
|run on top of |
|3rd found;    |By Aristo T,
|use with fcm  |upd April 12,
|pmatch app    |2020
```

```
<i2>
|the next
|cards are
|ca copied
|in from
|start of
|the gem
|image
|editor

<i3>
miniarray=      &&
^.              miniarray
222             kl
232             |stores
mm              |packed array
                |for image
                |--loading 216
sz              |is enough!

<i4>
maxiarray=      &&
^.              maxiarray
500             kl
503
mm              500
                500
                maxiarray
sz              wwyymatrix

<i5>
250000
maxiarray
lk




clrthismany

<i6>
loadanyarray=  t4
```

```
|input disk#,   t3
|card#,         t2
|quantity of    t1
|cards and on  | and room
|top array     | enough is:
|that has room | 232 times
|enough        | qty cards

<i7>
ll:99999999    j3
               dc
j3             t3
0
eq
se
ex


<i8>

j1             lc
j2             j4
rr             232
               fw




<i9>

j4             j2
232            up
ad             t2
t4             lo.




<i10>
saveanyarray=  t4
|input disk#,   t3
|card#,         t2
```

26

```
|quantity of    t1
|cards and on
|top the array;
|be sure card#
|makes sense!

<i11>
ll:99999999     j3
                dc
j3              t3
0
eq
se
ex


<i12>

j4              j1
sc              j2
232             rw
fw




<i13>

j4              j2
232             up
ad              t2
t4              lo.




<i14>
unpackimage=    s6
| input mini-   s5
| array and,
| on top,       i5
| maxi-array,   50000
```

```
| be sure esp  i6
| maxi-array   kp.
| has room!

<i15>
loadpackimage= t3
| input disk#  t2
| and card#,   t1
| and on top,  j1
| addr of      j2
| roomy enough 216
| array        j3
               loadanyarray.

<i16>
cliptrailnum=
cliptrail
intonum.




<i17>
justload=      miniarray
|input disk#   lk
|and, on top,  loadpackimage
|card#, and    miniarray
|it'll unpack  lk
|to maxiarray  maxiarray
               lk
               unpackimage.

<i18>
|the previous  |note that
|cards are     |for y=0 in an
|ca as in the  |image of the
|start of the  |gem sort,
|gem image     |that's the
|editor        |bottom line
```

```
<i19>
athreshold=    |This is eg
^.             |set by next
               |func; the
               |core pattern
               |refers to
120            |tones gt or e
athreshold     |to this, and
kl             |lt this

<i20>
pickthreshold= athreshold
|Assumes that  basisthis
|maxiarray has
|a photo, this maxiarray
|sets variable lk
| athreshold   t1
|from 15 rffg
|dots in it    ll:15

<i21>
499            lo
af
499            athreshold
af             lk
j1             15
ww             rd
athreshold     athreshold
ku             kl.
```

Just one little comment here: the AF function, which is a
two-letter function short for 'A relatively Free
fluctuation number', works well with small numbers up to
some ten thousands. In the Third Foundation, the RFFG
function handles numbers up to the two billion range.
The AF function gives you any number between 1 and what
you give it as input, in this case, 499. Just which
number is calculated from the milliseconds counter part of
the PC clock--meaning that it is extremely likely to be a
very different number each time you start the program; and

once the starting-point is different, the number series
that AF, and any RFFG number function, generates, is
different--as it inputs its previous number into itself to
change the upcoming results. All these twistings are to
ensure a degree of 'coincidence' in the number, even if we
have a worldview that doesn't allow any actual 'random-
ness'.

   In order to calculate ATHRESHOLD, we see that there is a
LL:15 loop that fifteen times pick out a greentone from
almost anywhere in the photo (1..499 is almost anywhere;
strictly speaking it ought to be 0..499 for X, and 0..499
for Y, but it is typical when we work with RFFG
approaches to treat edges of matrices a bit carelessly, as
long as we don't overstep the boundaries).

   After picking 15 greentones, each 0..255 inside the
image, it RD, Round Divides, on 15, to get the average.
The whole greentone range is 0..255 because that's 8 bits,
even though the G15 PC screen actually only uses 64 tones;
and indeed the packed format of the GEM photo also only
uses such a more compact tone-scale--even though it is
spread over the full 8-bit number range as it is expanded.
The 64 tonerange has proven itself to be more than
adequate in giving smooth, fascinating, beautiful photo
representation in the range from black to monochrome
spring green. The human mind gets fully activated,
reconstructing the richness of sceneries by being given
this generous visual stimuli--which is generous without
being over-generous.

```
<i22>
shownumhere=    i1
|in: num,x,y    20
|action:clrs    su
|space for num i2
|and shows it  10
s2             su
s1
s5
```

```
<i23>
i1              i5
120             makenumber
ad              i1
i2              i2
30
ad
0
rt              bx.


<i24>
showthres=      athreshold
|shows var      lk
|athreshold     600
                665
                shownumhere.




<i25>
maxcpatterns=   100
^.              maxcpatterns
|ie, what is    kl
|max quantity   |These are
|core           |stored in
|patterns,      |cpatterns,
|each a 35x35   |0->34 x 0->34
|matrix?        |in a series
```

The 35 x 35 matrices with the core patterns that this
program is oriented towards are stored, one after another,
in a long matrix. In order to store 50 of these, it has
50 x 35 rows, but 35 columns all the way.

  Note that it is a feature of how GEM photos are stored
in that the G15 PC draws them on the screen from bottom
and up--an optimistic movement. This means in practise
that the top of the matrix has the bottom of the image.
Normally, this poses no problem but it does mean that when
we wish to compare a core pattern matrix which we have
drawn with the top row representing the top of the drawing
with a photo in which the top row is at the bottom of the

matrix, one or the other has got to be turned around just
before the comparison is done. In our little program, we
'load' the core pattern each time to a matrix just before
we compared it with tiny squares in the image, and in this
'loading process, we also flip it so that the core pattern
points in the same direction as the main image. For this,
see i:55, LOADSCANMATRIX and the little matrix SCANMATRIX.
   The whole collection of core patterns are stored next in
CPATTERNS.

```
<i26>
cpatterns=      ad
^.              mm
35              sz
35              |xtra 10&more
mm              |good w/saving
maxcpatterns    &&
lk              cpatterns
14              kl


<i27>
35              cpatterns


maxcpatterns
lk
35



mm              wwyymatrix

<i28>
clrcpatterns=   1225
|Clears also    mm
|ten extra


maxcpatterns    cpatterns
lk              lk
10
ad              clrthismany.
```

```
<i29>
qtycpatterns=   nowcpattern=
^.              ^.
|ie, how many  |ie, which is
|core patterns |the present
|have been     |core pattern?
|initialized?
qtycpatterns    nowcpattern
dancethis       dancethis


<i30>
showcpatnum=    qtycpatterns
|shows qty      lk
|initialized    380
|core patterns  300
|and which is   shownumhere
|the present
|one also



<i31>
                nowcpattern
                lk
                380
                335
                shownumhere.




<i32>
mtonebright=    mtoneerase=
^.              ^.
|ie, is mouse  |ie, is mouse
|tone set to   |in erase mode
|bright now?   |now?

mtonebright     mtoneerase
dancethis       basisthis
```

33

```
<i33>
sampleimgnum=  sampleimgnum
^.             dancethis
|which image
|number, 1 and
|up, with which
|to check core
|patterns, at
|present
```

The SAMPLEIMGNUM is merely a global variable that tells
the program which image, on the K-disk, starting with K:1,
that is at display and worked with at present. A simple
calculation shows that this number should be not much
bigger than 9089 in order for all the images, each with
220 cards, to reside on one disk with a maximum of about
two million cards.

  Obviously, once core patterns are put to use, where the
core patterns are stored, and where the images are stored,
may be anywhere else. The decisions for this app to have
a particular role for L-disk for core patterns, and K-disk
for images, is just to make the program shorter in that it
doesn't have too many options open. It is a program used
to lay the foundation. Other pattern matching apps,
calling on what is started here, can be much freer in
where things are stored.

```
<i34>
fitsamplenum=  9089
|ensures that
|sampleimgnum
|has ok range  makefit
sampleimgnum
lk

               sampleimgnum
1              kl.
```

```
<i35>
showsampleimg= m3
|Shows img     220
|from 1 and up mm
|to work on    up
sampleimgnum
lk


s3            s5


<i36>
503           11
0             i5
              justload



11            pickthreshold
i5
ba            showthres.


<i37>
putmtone=     s5
|In: x,y,tone s2
|Action: puts s1
|tone to x,y
|at matrfield;
|converts to
|0,1,2 & puts
|to cpatmatrix
```

As it turns out, it is easy to draw on the screen using
tone values that when divided on a hundred happens to give
0, 1 and 2, which is exactly what we want to store more
'formally' in each core pattern matrix.

```
<i38>
i1            i5
i2            100
              di
              |Values: 40,
              |120, 255, to
              |0, 1, 2,
```

```
i5              |now at stack
matrfield

<i39>
m1          cpatterns
m2          lk
nowcpattern
lk
dc
35
mm
ad          yy.

<i40>
convtotone=  120
&abc&.       1
|used to show  convtotone
|cpat matrix  ya
40           255
0            2
convtotone   convtotone
ya           ya

<i41>
getmtone=    mtoneerase
|Mouse has   lk
|this working
|tone now    se

             ex

40           sh

<i42>
             mtonebright
             lk

             se

             w
120
255          sh.
```

```
<i43>
mouseworknow=   35
|core pattern  minofthis
md              s2
t2
t1

                35
                minofthis
moxytomatxy     s1

<i44>
j1              i1
n?              i2
                getmtone




d4              putmtone

<i45>
30
activepause.




<i46>
clrcorearea=    71
|the area       45
|where core     299
|pattern is     262
|shown          40


                rt.

<i47>
```

```
cpatnumadd1=    1
|With range-    maxcpatterns
|check, adds    lk
|1 to           makefit
nowcpattern
lk

                nowcpattern
up              kl


<i48>
nowcpattern     qtycpatterns
lk              kl.
qtycpatterns
lk



maxofthis

<i49>
cpatnumsub1=    1
|With range-    maxcpatterns
|check, adds    lk
|1 to           makefit
nowcpattern
lk

                nowcpattern
dc              kl.
```

The next function picks the core pattern matrix values
and shows them on the screen, allowing the core pattern to
be thought about, experimented with, and, if need be,
modified.

```
<i50>
reshowcpat=    showcpatnum
|redisplays
|cpattern      cpatterns
|from the      lk
|matrix in     t1
|ram

clrcorearea

<i51>
nowcpattern    ll:35
lk             ll:35
dc
35
mm


t3

<i52>
m1
m2
j3
ad

j1
ww
s5

<i53>
i1             matrfield
i2



i5
convtotone     lo
ay             lo.

<i54>
scanmatrix=    &&
```

```
^.              scanmatrix
35              kl
35              |to speed up
mm              35
100             35
ad              scanmatrix
sz              wwyymatrix

<i55>
loadscanmatr=   nowcpattern
|This copies    lk
|relevant core  dc
|pattern into   35
|scanmatrix,    mm
|while driving
|image y from
|bottom up      tx

<i56>
cpatterns       ll:35
lk              ll:35
t5
                m2

scanmatrix      m1
lk              jx
t7              ad

<i57>
j5
ww

m2              j7
34              yy
m1
                lo
su              lo.
```

```
<i58>
recentscanx=    recentscany=
^.              ^.
|Next func
|sets these
|while
|scanning
recentscanx     recentscany
basisthis       basisthis
```

The next function, SCANCPATHERE, we have already
mentioned in the beginning of this chapter. This scans for
the core pattern at a particular X, Y point in the 500 x
500 photo or GEM image which has been unpacked to
MAXIARRAY. It uses the SCANMATRIX, so that it doesn't have
to recalculate the row number again and again, assuming it
to be loaded before a series of calls to this function.

  The global variable ATHRESHOLD is the average tone
value.

  To save time for the PC in any such pattern matching
process, it is a good strategy to have the function exit
as soon as it has become obvious that there is no match in
one particular loop. The more non-zero bits in the 35x35
matrix, the more chances there are that the core pattern
won't fit with the image. When you design core patterns,
therefore, and check with images, if you don't find that
any images actually turn up any match with a core pattern,
an approach can be to delete some pixels in the core
pattern. Typically, it should have at least one dark
pixel and at least one bright pixel, and usually several
more, and often a whole series of them.

  This program will then look at 35x35 points of the GEM
photo, and in each case, it will compare, using 'GE', or
'Greater than or Equal to', the pixel with ATHRESHOLD.
This takes place in i:61.

  In the card before, i:60, the function is set up to
swiftly exit with a BASIS flag (zero) to indicate 'no
match'. If the function 'discovers' that the pixel value
is 1 (indicating that a dark pixel is sought for) in the
core pattern, while 'GE' produced DANCE (one)--or that the
pixel value is 2 (indicating a bright pixel) while 'GE'
produced BASIS--the function at once exits. In other cases

--where either a match was found, or the core pattern
pixel was set to 'transparent' (ie, not 1 or 2 but 0)--the
loop goes on; and if indeed the LL:35 times LL:35 loop
continues without flaw, all the way, the BASIS flag is
removed and a match is indicated by DANCE instead--this
takes place in i:63.
```
<i59>
scancpathere=  t2
|in: x, y      t1
|gives: flag   scanmatrix
|action: flag  lk
|is dance when t3
|scanmatrix    maxiarray
|located in    lk
|x, y in maxi  t4

<i60>
athreshold     j2
lk             recentscany
s5             kl


               |initial flag:
j1             basis
recentscanx    ll:35
kl             ll:35

<i61>
j1             j4
m2             ww
ad             i5
               ge


j2
m1
ad             tx
```

```
<i62>
m2          j8
m1          1
j3          eq
ww          jx
            an


t8

<i63>
j8          se
2
eq          ex
jx
n?          lo
an          lo
            sh
or          dance.
```

And next is of course the up to 32 calls of the previous
core pattern matching function at various RFFG chosen X, Y
positions in the image. You see that 460 is the input to
AF, meaning that there is a bottom row line of some four
pixels that are ignored. Since the image is upside-down,
it means that the topmost four pixels of the photo are
ignored. Also, AF starts at 1 rather than 0, meaning that
the bottommost pixel row is ignored. In practise, we could
direct a pattern matching for an image in a camera of a
robot to ignore even more at the sides, because what is
most important will generally--sooner or later--typically
be in the centre of the image.

```
<i64>
scanforcpat=  |gives: flag,
|Using the    |dance means
|nowcpattern  |rffg position
|in matrix    |gave at least
|cpatterns,   |one match;
|scans for it |athreshold
|in the gem   |determines
|maxiarray    |what contrast
```

```
<i65>
loadscanmatr    scancpathere
dance
ll:32           se

460
af
460
af              ex

<i66>
lo              sh




                basis.

<i67>
liteshowscan=   400
|Action:        540
|brightens      500
|area that      580
|might say      255
|'match'
|after
|'arrow-right' rt.
```

The previous function creates a bright spot just when the
matching process goes on, which is replaced by the word
'MATCH' or hyphens ('_____') when it's done. When there is
a match, the next function recreates the little square of
the image that had a match with the core pattern and shows
it on the screen--turned in the right way--meaning that
we see, in card i:70, the function SU, or substract, that
turns the Y-coordinate on its head during the pixel
drawing.
  Note that it is possible to stick to the 35x35 core
pattern idea even if you should want to establish a way in

which a core pattern is applied more over the whole of the
photo. For instance, a photo can be compressed into a much
smaller photo, and replicated all over the 500x500 area,
before a core pattern is applied. Normally, by having
well-designed core patterns, and a large and suitable
enough entrainment process, then, at least for a very wide
range of pattern matching applications, such extra pattern
checks won't be necessary; but it is good to know that
more options exist within the present strategy.

  When you have read this far in this program, you have
seen all its technical content. The rest of this program
is just about saving and loading from disk and interacting
with the keyboard and giving proper text output on the
screen along the way.

<i68>
showscanpart=   recentscanx
|action: shows lk
|the excerpt   sx
|from the
|image that
|had a match,   recentscany
|separately   lk
|on the screen s9

<i69>
maxiarray   m2
lk   ix
t3   ad

                m1
ll:35   i9
ll:35   ad

```
<i70>
j3              410
ww              m1
s5              su

                i5
m2              p3
140             lo
ad              lo.

<i71>
wherescan=      showscanpart
|action: shows
|where on the
|image the
|recentscanx,
|recentscany
|found the
|core pattern

<i72>
recentscanx     d
lk              34
503             ad
ad              d
466             34
recentscany     ad
lk              255
su              rt

<i73>
recentscanx     d
lk              30
505             ad
ad              d
466             30
recentscany     ad
lk              50
su              rt.
```

```
<i74>
showscan=       &_____&
|in: flag       &MATCH&
|action: with   j1
|flag dance,
|shows 'match'  se
|& shows where
|on image
t1              w


<i75>
sh              420
                560
400             bx
540
500
580
0
rt


<i76>
j1

se




wherescan.

<i77>
qtyinputfield=
&abcdefghijk&.


|This is used
|with l9 both
|for qty save
|& qty load

<i78>
qtycpatsave=    390
```

```
|Gives: qty     480
|Action: asks   450
|for how many   515
|cpat save      0
|and gives 0
|or 1->100
               rt

<i79>
400            0
490            100
3
qtyinputfield
l9

qtyinputfield
cliptrailnum    makefit.

<i80>
savecpatnow=    s5
|in: qty
|Action: in
|case of 0,
|exits; or      |uses disk l,
|it saves 1     |card 1, as
|to 100 core    |start
|patterns

<i81>
i5
n?

se



ex

<i82>
12             up
1
               cpatterns
```

```
i5              lk
1225
mm
232
di              saveanyarray.

<i83>
qtycpatload=    390
|Gives: qty     505
|Action: asks   450
|for how many   545
|cpat load      0
|and gives 0
|or 1->100
                rt

<i84>
400             0
525             100
3
qtyinputfield
l9

qtyinputfield
cliptrailnum    makefit.

<i85>
loadcpatnow=    s5
|in: qty
|Action: in
|case of 0,
|exits; or       |uses disk l,
|it loads 1      |card 1, as
|to 100 core     |start
|patterns

<i86>
i5              clrcpatterns
n?
                i5
se              qtycpatterns
                kl
```

```
              nowcpattern
ex            dancethis

<i87>
12            up
1
              cpatterns
i5            lk
1225
mm            loadanyarray
232
di            reshowcpat.

<i88>
pressedspace= basis
|Check for    ck
|keyboard     n?
|during mouse
|core pattern se
|work, and
|handle it; &
|tell is space ex

<i89>
sh

ki




s1

<i90>
i1            mtonebright
|f1?          isvarbasis
282
eq
n?

              mtonebright
```

```
d4              kl

<i91>
i1              sampleimgnum
|f4?            dancebeneath
285             fitsamplenum
eq
n?


d4              showsampleimg

<i92>
i1              sampleimgnum
|f5?            danceup
286             fitsamplenum
eq
n?


d4              showsampleimg

<i93>
i1              mtoneerase
|f10?           isvarbasis
291
eq
n?


                mtoneerase
d4              kl

<i94>
i1              pickthreshold
|enter?
13
eq
n?


d2              showthres
```

```
<i95>
i1              cpatnumadd1
|arrow up?
273
eq
n?


d2              reshowcpat

<i96>
i1              cpatnumsub1
|arrow low?
274
eq
n?


d2              reshowcpat

<i97>
i1              liteshowscan
|arrow right?
275
eq
n?


                scanforcpat
d3              showscan

<i98>
i1              qtycpatsave
|ctr-s?
19
eq
n?


d2              savecpatnow

<i99>
i1              qtycpatload
```

```
|ctr-l?
12
eq
n?


d2              loadcpatnow

<i100>
i1
|space?
32



eq.

<i101>
dothepatterns= clrcorearea
|Main routine
|drives this    mtonebright
|app for        dancethis
|tuning core
|patterns for
|pattern match mtoneerase
showsampleimg  basisthis

<i102>
ll:1            se


mouseworknow   q1


pressedspace   lo
n?             kb.

<i103>
pworkinfotx1=
^.             cliptrail
longtxt*
```

```
f10 erasemode  pworkinfotx1
mouse on/off
 <space> exit
*txtcomplete
               kl


<i104>
pworkinfotx2=
^.             cliptrail
longtxt*
f1 toggle brig pworkinfotx2
ht/dark mouse
 f4 prev img
 f5 next img
*txtcomplete   kl


<i105>
pworkinfotx3=
^.             cliptrail
longtxt*
ENTER recalc t pworkinfotx3
hreshold value
, now:
*txtcomplete
               kl


<i106>
pworkinfotx4=  *txtcomplete
^.             cliptrail
longtxt*
arrow-up/benea pworkinfotx4
th: select cor
e, arrow-right
 apply to phot
o              kl


<i107>
pworkinfotx5=
^.             cliptrail
longtxt*
ctr-S save cor pworkinfotx5
e patterns, ct
```

```
r-L load. Max
100.
*txtcomplete   kl


<i108>
pworkinfotx6=
^.             cliptrail
longtxt*
result of last pworkinfotx6
 'arrow-right'
:
*txtcomplete
               kl


<i109>
pworkinfotx7=
^.
longtxt*
how many patte pworkinfotx7
rns load from
L1:
*txtcomplete
               kl


<i110>
pworkinfotx8=
^.             cliptrail
longtxt*
how many patte pworkinfotx8
rns save to L1
:
*txtcomplete
               kl


<i111>
pworkinfotx9=
^.             cliptrail
longtxt*
qty cards: 122 pworkinfotx9
5*qty div 232,
 plus 1.
*txtcomplete
```

kl

<i112>
pworkinfotx10=
^.   cliptrail
longtxt*
This is cpatte   pworkinfotx10
rn number:
*txtcomplete

                  kl

<i113>
pworkinfotx11=
^.   cliptrail
longtxt*
Quantity core   pworkinfotx11
patterns:
*txtcomplete

                  kl

<i114>
workwpintro=   pworkinfotx2
|infotexts   lk
                 10
pworkinfotx1   700
lk   bx
10
735
bx

<i115>
                 pworkinfotx4
                 lk
                 10
pworkinfotx3   630
lk   bx
10
665
bx

```
<i116>
                pworkinfotx6
                lk
                10
pworkinfotx5    560
lk              bx
10
595             0
bx              showscan


<i117>
                pworkinfotx8
                lk
                10
pworkinfotx7    490
lk              bx
10
525
bx


<i118>
                pworkinfotx9
                lk
                10
                455
                bx




<i119>
                pworkinfotx11
                lk
                10
pworkinfotx10   300
lk              bx
10
335
bx              showcpatnum.
```

```
<i120>
workwpatterns= workwpintro
|Algorithm for
|studying core
|patterns        nowdirectmatr
ce               dothepatterns
workwpintro      ce
                 restoremdraw.
clrcpatterns     |qu

<i121>
                 ^workwpatterns




                 zz
```

CHAPTER 4: GETTING ON WITH ENTRAINMENT

The second app, #5551269, was made in the days after the
previous app was made. It builds on it and for that reason
the code is easy and obvious once you have mastered the
code of the previous app. It contains much the same thing.
The difference is that, whereas the Core Pattern Maker app
comes as just code without any example data, the next app
brings with it 50 example core patterns, which have shown
themselves--during the work process with this entire
volume--to handle a pretty good range of pattern
matching objectives.
  Also, this next app--the Core Pattern Entrainment app--
assumes that indeed 50 core patterns are a good number:
and it offers a way to relate to what it call 'pans' of
these core pattern matchings against a select set of
images to keywords. The keywords are made so that they
can with ease be shown in one column, all at the same time
--at the screen--of the G15 Spreadsheet. They are maximal
14 in size, and quantity pr image up to 19. When such a
set of keywords are coupled with 50 numbers, zeroes and
ones, laying out the 'pan' of matches with the core
patterns, and we have set aside RAM enough for thousands
of these (the number is set to 6000), so we've a starting-

point for pattern matching of a kind that we can
experiment with through an expansion of the G15 PMN FCM
Spreadsheet.

The word 'pan' can be thought of as a metaphor for how,
in getting the PC to check for matches with core patterns,
we are 'washing gold in the pan', looking for the gold
nuggets of good matches.

Ideally, it would be nice if we could entrain the pans
with one set of images, type in keywords that describe
them, and find that when we apply the pattern matching
through these pans to other images, we would get a perfect
description of each one of them in terms of just the
right keywords. Alas, the world is more fuzzy.

Still, we have here something we can work on and refine
more and more depending on what context we wish to put it
to work in. And there is no reason why we cannot build
additional parameters of pattern matching of various
types over and around the concepts introduced with these
apps. We can treat--compress and/or expand--the input GEM
photos; we can compare pans in novel ways; we can build a
set of extra tests that are combined with the results of
the pans to further give information about the images.

And if we absolutely want to, we can redo the whole
process, expand on the quantities involved, and optimize
some parts of the code to get enhanced speed.

We can also connect a robotic environment with several
types of inputs, each of which may be related to its own
set of core patterns, and the results can be correlated in
this way and in that way to reduce ambiguity in the
pattern matching results. All these things are opened up
easily enough when we, as here, engage in good first-hand
programming in a first-hand programming language and have
an emphasize on human understandable data without too many
funny statistical tricks and formulae.

The results of an entrainment of a set of some thousands
of photos are included in the third app made in connection
to this volume, app #5553588, which is the expansion of
the G15 spreadsheet with the sort of pattern matching
approaches introduced with the first two apps. Here, you
can check out this entrainment--for what it is worth,
against any set of photos you like--including the inbuilt
library of images in the G15 PMN platform at D:90000 (none

of which were included in the original entrainment set).

Due to the discrepancy between the size of the whole 250,000 pixel photos with 64 different greentones in each position, and the two-bit greentones in the tiny 1,225 core pattern matrices, every time there is a 'shopping' around for a match, it is highly dependent on the RFFG selections. In other words, the pans get different each time even when we don't change the threshold and when we don't change the image. This is fine as long as there is a pattern to the pans, something consistent that points to a meaningful matching for us. The keywords typed in for a certain pan will be considered 'suggestions' only, and it is part of the G15 PMN FCM Spreadsheet that makes use of these pans to come up with more than just a single pan as a 'winner'. Keywords from two or three pans should be included and the bubble sort will help point out the top three.

The way we have started to use the standard G15 Spreadsheet to make these 'patmat spreads' is to leave the whole spreadsheet code exactly intact at almost all places, and just have added something to its internal script language, used for instance when you specify that in column C21 you wish the sum of all values in the first ten columns of A minus some columns in B, multiplied by a value from a particular location in column D.

In expanding the spreadsheet, we have some functions to show an image, another to recalculate the threshold and the 'pan' of the image relative to the core patterns, and locate the most appropriate pans of the store entrained set, and yet more functions to retrieve the individual keywords from the top three pans (ie, those with the highest score of matches with the input image's pan, sorted by bubble sort). Instead of rebuilding the spreadsheet interface in any way, we have provided an example of the use of these functions with one particular 'patmat sheet', that can be loaded and at once be put to use e.g. relative to the inbuilt library of GEM photos at D:90000, and in which the outputs of the core pattern maker app #5551234 and the entrainment pans from the core pattern entrainment app #5551269 are, as initial examples, included.

Let us now sketch how the FCM platform, as included in
source in the former volume, and which is playfully used
in the G15 Spreadsheet, can be programmed to make use of
the pans of matchings with core patterns that we have got
through the apps to facilitate both better pattern
matching and the sorting of robotic tasks. This will
prepare us for doing some FCM programming in next volume.
In the next volume, we will sort some tasks but carry them
out relative to the modification of a GEM image, instead
of getting a robot physically to do things in its
physical environment. To command a robot through the core
robotic program is typically a question of callibrating a
seemingly endless series of electronical impulses to its
motors or servers while punching in one glimpse after the
next from its cameras and other input devices into a
pattern matcher. The real thinking lies in how the
pattern matching is done and how the sorting of tasks are
done. The tasks themselves are converted into these
streams of signals, which may be simple 7-bit ASCII
characters transmitted through elementary RS232
electronics to the electronic digital circuits which are
entwined with the robotic motors.

  As FCM gets info from some form of pattern matching into
its nodes, the chief initial question is: how good is this
matching relative to the task at hand? The elementary
feature detection, which eg can take place by the 50 core
patterns, each of a 35x35 matrix where the options are
bit 0 for transparency, bit 1 for low brightness and bit 2
for high brightness, may in some contexts be superb and in
other contexts hardly work at all.

  It is superb when the photos are having a high degree of
what we can call 'fractal spread'. By fractal spread we
mean that shapes represented when the image is seen from a
distance are also found when the image is studied in tiny
detail; and that the shapes found in tiny detail in some
part of the image are typically found in any and every
part of the image. A photograph of oceanic waves have a
high degree of fractal spread: and is typically the
easiest for a detail-oriented feature detector like our
core pattern matcher, which uses RFFG to 'shop in' here
and there on the image, to detect.

  If on this image of waves we see glimpses in one tiny

portion of a face, that indicates the presence of a human being, probably a swimmer, in this ocean or in this lake. For us as human beings, it is a drastic change of context: either we are seeing the spectacle of pure water, or we are perceiving that we are not alone, but that there is a person out there.

If all we have got is one photo, the only way we can use a detail-oriented feature detector to recognise this face, if this detail-oriented feature detector just uses a handful of RFFG positions in it, is to run it again and again and check statistically for the consistency in the analysis. The pattern matching over the face will give rise to completely different pans than all the other parts of the image. The next action can be for the program to find a way to get additional photos in which the focus is on the face, or, if one photo is all we have got, to enlarge on this part of the photo and do feature detection over this.

A general principle here is that context is something that is always open to exploration, and that by starting with any set of feature detections on an image, we are not given proofs of any context, but rather we are getting instances of confirmation and instances of disconfirmation --or, in other words, a sense of adjustment of the balance of probabilities--as to what the context might be.

The fact that context is only inferred indirectly, rather than strictly deduced, is one of the reason why the programming of robots is fraught with ethical concerns. Just think of a street-washer robot: it has got to have a good analysis of what is in the street, before it pours water or whatever it is doing to cleanse the street. And a street with a person, or with some other robots, is a radical shift of context from an empty street. It has got to the picture right, before the commencement of its cleaning program can start.

Here is how we might be using FCM for this sort of programming challenge: let all the input from the feature detection be represented--possibly as keywords, perhaps as three or more sets of up to 19 keywords (as in our present set-up) sorted as for how much they seem to pertain to the last image matchd over--be represented at one level of FCM nodes. That might mean that each keyword

is in a separate position in the G15 PMN FCM Spreadsheet,
and that all these nodes are given the same, or rather
much the same, 'level number'.

  If you recall, in FCM we are having nodes, also called
funds or foundries, and the overall FCM controlling
program runs through the funds again and again in an
order that is sorted according to level number--from the
lower level numbers, which can have feature detection,
onwards to higher and higher level numbers, which, eg at
the highest level, involve output in the sense of tasks.
In between the lowest and the highest level numbers we
have the highest priorities--including ethical priorities
when it is a robot doing something in the world--and the
goals of the robot. At this level, the elementary
features of the input of the world is assumed to have been
summed up pretty well--also as regards context--so that
tasks can be initialized to carry out changes of the world
to fit with the goals that it have. For a cleaning robot,
the goal is that some part of the environment gets
cleaner, while it has some ethical constraints that say,
for instance, don't do cleaning in case there may be
someone, or something, present, that could be damaged in
the cleaning process. This is clearly an ethical concern
and it always comes in when it comes to robotic
programming, of course also other types of programming
also have ethical concerns, to some extent, usually.

  How might FCM handle the process of getting the
higher-level summary of the situation right? Well, one way
is to constantly initiate tasks that involve moving the
robot and its cameras and other input devices around and
get more input. It can then statistically add up the
results of repeated pattern matching processes taking
place within the space of the past few minutes, while it
does little except waiting for a more complete analysis to
be finished.

  The middle-level of the FCM funds will therefore have
algorithms that have in them some degree of timing
variables; the algorithms will have in them a degree of
weighing of how certain a summary of a situation is
correct; the algorithms can decide that the only tasks
appropriate next (apart from turning off the robot) are
those of gathering more pattern matchings; and only when

there is a certainty that a number of conditions have been
fulfilled, these middle-level-numbered funds (which in
terms of our mental map are on top, rather like the ASCII
character ^ which we also call 'the hat', and which we use
as quote symbol in our G15 PMN programming)--only when
there is a good degree of certainty--perhaps measured in
permille--will the most active, and presumably useful,
capabilities of the robot be engaged.

All this suggests that by having a robust, coherent,
well-thought approach to the elementary pattern matching,
the elementary feature detection, one that is really well
understood--in a first-hand sense--we can use the FCM
programming framework creatively to go from this basis
analysis to higher-level forms of analysis in all sorts of
different ways. With a good foundation in elementary
pattern matching, which may be what we have here with the
apps mentioned in this volume, we can call on the vast
number of options for how to make use of this pattern
matching calls through 'constellations' of pattern
matching calls. In other words, a well-made FCM program
has a pattern of calling on pattern matching functions;
this pattern can be shaped according to need.

Let us give some thought to just how fantastically
complex the sorting of tasks may be. In real life, one
thing is to get a good grip of the facts, and a form of
narrative over the facts that is not full of misplaced
assumptiosn; but another thing altogether is to get the
right action, and action plan, in each moment. Of course,
getting the map of the situation right is usually an
excellent starting-point for getting a plan of action
right, but for a human being, there may be no 'cause-and-
effect' pattern here. The number of goals and priorities
that can be called on may be very high. And even if the
goals are fairly concrete--let's say, 'make some money',
how to get from that higher goal to suitable sub-goals and
actions given a certain situation may be far from obvious.

One of the ways humans engage in the working out of
action plans, given a sense of where we are, is by means
of mental scenarioes--suppose we do such and such; and
suppose the people and the environment responds in such
and such way; suppose further that we respond to this sort
of response in this way, and that sort of response in that

way, where would that get us relaive to some goals and
relative to ethical priorities?

A way for an FCM platform to implement such an approach
to sorting out robotic goals would be to have several FCM
networks. The FCM main program assumes this possibility.
Each network of funds can have a different role. Usually,
one network will be the master network, and concern the
real reality and the real actions to be done. All the
other networks would serve the role of simulations, of
scenarioes. For instance, a cleaning robot may want to
move a table to cleanse under it: but is moving a table,
in this case, safe, relative both to the people who may
be in the same room, and relative also to the table
itself, and whatever other things that may be in the
room?

In case there is a fund that has an algorithm connected
to such movement of objects in the room, this algorithm
can have in it link to information of how the situation
will, with likelihood, be after the first portion of the
movement task has been completed. This fund can therefore
call on a scenario in which something of the input side
of the FCM network, instead of coming from cameras as for
the main FCM network, is coming from the information that
it has stored.

As part of a scenario FCM network, there can be further
changes of the situation, in which the tasks nodes are
simulating the events or actions of other participants or
things in the environment. For instance, if the table is
moved by the robot so that it touches the wall, the wall
will usually stop further movement. The interaction
between the wall and the table is something that could be
worked out in a scenario. In such a scenario, some events
unfold while the main FCM network is merely 'watching it'
--rather as you in your own mind is watching how a
possible action may lead to changes in the environment,
while considering whether to do this--while some future
changes in this scenario is the main FCM network carrying
out more of its planned tasks on this simulated world,
instead of in the real worl, in order to calculate
whether there is an approximation to the higher goals that
the robot has for this situation.

And if you feel this is a staggering complexity, well,

yes: but it is still possible to implement all of this
through suitably-thought-through algorithms connected up
in FCM nodes. The nodes don't say whether it is to be
done through one or none or many scenarioes; does not say
that we cannot have such and such interactions or such and
such data. It is meant to be a sort of open matrix for
whatever approach we may find necessary to get the
programs going that we have got to have going to get
society, or our business, or our game or whatever it is,
work out neatly.

   Fortunately, it is possible to begin much more simply
than having scenarioes. It is all about having a very
well-defined context, in which the relationship between
the input to the FCM, and the output from it, is fairly
easily defined. Once we have a set of very simple FCM
programs involving also sorting of robotic tasks, we can
find ways to gently expand such programs with a little bit
more simulation of alternative task-routes; and from
thereon get on to quite advanced scenarioes in a gentle
way. It may take time to find the simple and the gentle
way; and part of the time it takes is to find simple and
gentle ways to do something even simpler first. That's the
way to build advanced programs.

CHAPTER 5: THE NOW AND WHY THERE IS NEVER "POST-TRUTH"

Let us honor the idea that these volumes are about the Art
of Thinking, not just the art of programming computers
smartly, and talk a bit broadly, put it all into context.
   In thinking philosophically and, as I am doing right
now, aiming to put into words in a book something which
presumably is valuable to read no matter which planet we
live on, it is always a challenge to lift the gaze from
the concreteness of the experiences I have in my daily
life right now, while not lifting it so sky-high that I
write in terms of pure abstractions of little use to
anyone, ever.
   One of the most concrete--and, hence, least
philosophically rewarding subjects to write about--is what
politicians talk about. Anything which is 'political' is
typically also emotional, but emotional only given a
particular background of some years of struggle and
story-weaving and discussion that is highly unlikely to
repeat itself in that exact form anytime later. However,
to those in the grip of a political discussion, it may

seem like what they are talking about is about as timeless
as any theme can get.

  And when politicians themselves get hot-headed--not
merely the groups in the population who discuss them--big
decisions about the shape of society may be shaped
informed--or mis-informed--by the emotionality and the
stories that have been weaved, correctly or incorrectly--
and so even if politics is full of illusion, its effects
can be real, and some of these real effects may be on the
level of drastic changes of society, of Nature, of
pollution levels, and for some people, the decisions that
politicians make affect livelihood and even survival.

  In such a context, it is not always easy to be maximally
tranquil about politics and politicians; and it should not
be a surprise that politics sometimes drag many people
into its maelstrom.

  The one way in which politics can have harmony is that
discussion is not allowed: but if it is not allowed on the
premise of a narrow, selfish, unwise ruler, it is not a
deep harmony. And so, because it is hard in humanity to
get a wise ruler, the tendency is to put up with democracy
in the sense of letting people 'quarrel it out'. As Plato
pointed out, the typical result of a democratical ruler-
ship is that egotism takes over; while his endavours to
spell out how a benevolent dictator/philosopher might rule
may seem naive in the light of the historical fact that
most benevolent philosophers have not the had the least
of the cunning required to grab a country and hold it,
through its dire powerplay, the way that actual
dictators so easily manage when people are not alert. And
the actual dictators have often been ego-centric though,
it has to be said, when they are over-thrown, the wars
that this has sometimes plunged societies into, cannot
have been said to be in the least an improvement.

  The hope that some so-called 'political philosphers'
have given support to, is--as an alternative to societal
quarrel and as an alternative to dictatorship--that of a
societal 'rational discussion'. And indeed, when the era
of computers and their networking begun, it was suggested
that the new 'openness' in society and the freer
availability of information could indeed open up for more
rational dicussion in society, and thus a new type of

societal harmony that is also democratic.

   While the potential for such a rational discussion is
clearly much greater when information indeed is more
freely available through computers interconnecting and
requiring little but electricity and cables or radio
waves to do so, it is however clear that this potential
typically lead to at least as much political quarrel as
before. I say that 'this is clear' as my own personal
summary of having closely read world news and political
discussions for a good while now.

   Recently, for instance, we saw a development in which
a politician in one of the largest countries in the world
took a new line and accused the media belonging to the
dominant alternative political party of being unfair and
imbalanced. Initially, this line of talk spurred some
fresh interest. Terms such as 'fake news' were slung back
and forth between the sides. Now the concept of 'fake'
involves not just that what is said is wrong, but that it
is intentionally both wrong and misleading.

   A sort of 'war of the media' followed. Those in the
news media who were called out by the political leaders
of engaging in lies and fake news started listing all the
"lies" of the political leaders, and counting these lies--
quickly getting a count that run from hundreds into
thousands of "lies".

   As a not-too-interested bystander, reading news rather
as a source of entertainment, this author tried to take a
stand: did in fact one of these two groups in media
represent reality better than the other? Some people
started talking about a 'post-truth' phase, in which there
simply isn't anything such as 'truth' anymore (something
which regularly have been proposed by philosophers but, in
the opinion of this author, rarely with any depth).

   And just as this discussion was going on pretty
fiercely, one of the narratives, one of the stories, that
suddenly emerged--as it were from the side of politics--
involved a new type of flu, a new type of virus, that
could potentially kill off a percentage or even more of
the population within months or a year or so, unless dire
measures were taken. With the presence of computers lined
up in networks to spread this sort of fear story,
populations, which earlier had been oriented towards

democratic solutions, quickly took on new majority
opinions involving the use of police to keep people
restrained to their homes, and loosing jobs that they
were no longer allowed to attend to.

What about the 'post-truth' in this? The virus seem to
be a spark of Nature, telling people, 'Look, you cannot
just narrate this bit of reality away, it is here.' Of
course some of the narratives emerging on the media
involved a total sense of denial of the virus, but all the
more dominant medias, of most political brands, eventually
got along to support the idea that a new, more deadly form
of flu or not-quite-flu is around.

Turning to one of the largest countries in the world,
the political leadership found itself at first arguing
that the virus wasn't as dangerous, and then eventually
joined forces with the opposing media side and the story
was that it was dangerous indeed. Without imposing a clear
judgement on which side was right in this conflict, the
emotional, political drama that played out threw new light
on the previous discussions about 'fake news':

Some early statistics indicated that maybe around two
percent of those who got infected might be killed by the
virus. When the leading politicians challenged this view,
eg using the phrase, "gut feeling" in arguing that this
statistics may not be 'kosher', it released a frenzy of
emotional accusation by the media belonging to the other
side of the political divide (for instance, it was said
that the leading politicians are coming with 'fake news').

Those who are working in the field of statistics have a
joke, or a saying: there are lies, damn lies, and
statistics. In other words, you are seldom very wrong when
you suggest that statistics may be wrong.

And indeed, a couple of months later, we could read--
across the political divide, in most media, including the
media that so emotionally accussed the political leaders
of engaging in 'fake news' when statistics was challenged
on the basis of "gut feeling"--that the initial statistics
was wrong, and the virus was less deadly than the initial
statistics suggested. It seemed that many got the virus
without symptoms; many who were at severe risk due to
the virus already suffered from obesity and complications
with their bodies. It was hard to find any trace of an

apologetic tone about all this; apparently, when others make a mistake, it is a consciously willed wrong statement worthy of being called 'fake news', but when the mistake is on one's own side, it is merely that they were wrong and took time to get it right.

Without getting deeper into this issue--which saw the whole world's emphasis on democracy turned aside to an emphasis on police control (and where the World Health Organization praised some of the most paranoic 'police states' in the world for their anti-virus tactics and recommended these to be implemented world-wide) a main philosophical point seemed to arise, namely, that in politics, no matter what phrase is called on--including the phrase 'fake news'--once emotionality gets the upper hand, once the prejudice that some groups of people are incapable of saying anything really trustworthy gets rooted in some other groups of people--much discussion of fact get fragmented and phrases are used with little attention to whether they refer to something real. Those who may have happened to have many viewpoints that were balanced may suddenly become the imbalanced side; while the imbalanced side may become the balanced side; and suddenly, perhaps, they join up and a majority conveys a uniformedly imbalanced view. This may be supported by a population that has been hypnotized by repetition through technology to believe in a certain narrative (eg, of their survival being at stake and therefore the good ol' freedoms of being able to go where one wants no longer have any meaning). Societies were put on 'lock-down', travel of many kinds suspended--and as a result, a large number of first-hand small businesses on the planet were wiped out, and perhaps more because of the narrative around the virus than what the virus would have led to, if it had spread in the typical ways that flu spread (and in which there is a degree of 'herd immunity' arising as the immune systems of the majority of population acquire an 'acquaintance' with the virus at large).

It is possible to view the facts in many ways and one may see that some of those whose business interest it is to have less small businesses around on the planet, also were in charge of the news machinery that spread the narrative about the virus that led to the closing of just

such businesses. This can be stated without actually implying any conspiracy theory; but it does show that there is easily a conflict between those who have the monopoly to disseminate narratives using technology (even if they leave strands of alternative narratives intact in corners of the world's media), and those who have an interest in spreading the concept of a vast diversity of small businesses. As a result, it may be in the interest of society that those who are in charge of the media are not also in charge of vast online empires, where the selling of objects through home-delivery is in exact opposition to the economy of thriving small businesses.

The same World Health Organization that so happily adviced the world's cities to go into a lock-down, leading to a closure of many small businesses, earlier on had a phase in which they, with success, forced smoking out of the cafees of most of the world. While this was motivated by health concerns of individuals, it can be argued that it was one of the factors that led to a severe decline of the lively cafe cultures across many parts of the planet.

In this picture, when we are confronted with a narrative that speaks in favour of people's health, we must see the whole structure involved, the assumptions, the perspectives, and be willing to call on what my father Stein Braten likes to call 'crossing perspectives'--in order to have a dialogue with oneself and raise consciousness to a level in which one is not over-run by a nonthinking dominant perspective in society.

Indeed, an economics philosopher, Robert J. Shiller, in his book Narrative Economics, suggests that both in a constructive and in a possibly destructive sense are the narratives in society; and that some narratives take on the feature of being 'contagious'--like a virus. In some cases, it would seem that a cure against certain narratives is to construct contagious counter-narratives.

A society can only have dialogue if there is a recognition of what takes place when certain perspectives become so dominant they no longer appear to be 'perspectives' and rather seem to be the only fact; for in order for a counter-perspective, or a set of counter-

perspective to be created, we must have a realization that perspectives are indeed perspectives--in other words, that there are assumptions at play, and that these assumptions may or may not be right.

But how do we judge what assumptions are right? How do we check a narrative? How do we engage in any fact-checking, when it is clear that emotionality and self-centered purposes can get into groups of people and lead to a reckless use of words to attack what is seem to be a 'dangerous' political position?

It is part of the art of thinking, part of the tranquility of the philosopher, to take some steps back from any hot-headed discussion and point out how we can achieve dialogue and factuality. It may be that the philosophers are over-heard just when they are most needed but that doesn't mean that it makes little sense to go through these more tranquil, more cool-headed points of view regularly. Somebody who has a good philosophical upbringing is likely to be less hypnotized by rubbish; more likely to be a voice of wisdom when a hysterical, self-destructive streak may get into people of lesser depth of mind.

Let us therefore summarize--briefly here, but regularly spoken of with more expansive terms in other contexts and indeed also in other places in this five-volume book series--how we can go from narratives and an imbalanced relationship to reality to a more harmonious, fulfilling, and indeed also rational relationship to reality.

As a starting-point, let us realize that a narrative, a story, is a bit like a video--it is a succession of something, and it can only exist by the repetition of just this succession. In the case of a narrative, it is a succession of sub-narratives, and each sub-narrative can be further analyzed and ultimately we find a number of assumptions, or postulates about reality, connected to these sub- or sub-sub-narratives. Only by glossing over the questions begged by these sub-narratives and pushing on with the main narrative can it have an emotional impact. The emotional impact dwindles as soon as we are led to question the points out of which the story is made up.

However, of course, a story may happen to be made out of a succession of extremely realistic and correct points, and in such a case the story as a whole deserves to have an emotional value so that it can become a leading light in our lives. To get to know that a story indeed is trustworthy in such a sense is however only possible if we take time to take apart the machinery of the story, so to speak, and find that each component can stand having the light of attention to it in a rigid sense.

In other texts, I have suggested that the vocabulary introduced by such philosophers as K.R.Popper do make sense when we look at the correctness, or lack thereof, of indvididual assumptions. Popper's insistence that each assumption--or, as he put it, 'theory'--can lead to a series of 'instances of confirmation' and 'instances of disconfirmation' makes good sense. It is not necessary to go as far as Popper sometimes did to speak of instances of 'falsification'. For instance, if you have a theory that it is sunny and not raining, that theory is not necessarily 'falsified' though you get a drop of water or something on your hand--that drop of water may have been falling of a building or a tree or something. Rather, that drop of water is an 'instance of disconfirmation.'

Similarly, though strong light may shine through the door of your home as soon as you open it may indicate that it is sunny, it is not a 'verified' theory that it is sunny just because a lot of light shines in. It may be that a new streetlight has been mounted, or that it is a cleansing machine shining strong light on the building just at the moment where you open the door. The so-called 'instance of confirmation' is just that: the theory may be a good one, but we should look calmly and carefully into a bundle of instances both of confirmation and of disconfirmation and see what interpretations suggest themselves.

The theory that the weather is good is of course one that particularly easily lets itself be checked; but a theory about how, for instance, the consciousness of a person relates to the brain and body of this person, or of how sexuality may influence our perception of beauty, or a theory of how any element of reality can be explained in terms of some other elements of reality, typically involve

a vast number of assumptions. Correspondingly, once we get instances of confirmation and instances of disconfirmation of such much bigger theories, there is a much larger number of alternative interpretations involved. Those who are in denial over alternative interpretations for some personal emotional reason are not scientific in the noble sense of 'being scientific' that we can extract from the best of the writings of K.R. Popper and his likes.

But even if we do put the 'popperian' (as we may call it) science ideals into action, we may find that a vast number of philosophical points simply cannot be deal with by looking to sensory observations in order to get instances of confirmation and instances of disconfirmation for core assumptions in important theories. Typically, this is a religious point of view: science deals with what is measurable, and religion deals also with what is beyond physical measurement possibilities.

Can therefore spirituality never be decided in a way that has a scientific flavour? Can the 'popperian' noble attitude to being scientific not be used where it matters perhaps the most to us, namely in the domain of the questions of the meaning of life, which includes the metaphysical and larger philosophical and religious questions, including also questions about God, reincarnation, sexuality and beauty?

In my own opinion, no, 'popperian science' cannot handle the most essential questions; but that doesn't mean that in the domain of more important questions, we are going to simply say that 'anything goes'. Rather, we should delinate--as I have done in other texts--an expansion of the popperian attitude in a meaningful way. My typical term for this expansion is 'neo-popperian' (ie, "new popperian") science.

In the neo-popperian approach to reality, we divide between two forms of gathering of instances of confirmation and instances of disconfirmation. One form of gathering is through sensory observation. The other form of gathering is through human intuition. Now K.R. Popper himself did speak sometimes of intuition as a source of confirmation and disconfirmation however he never elaborated on this approach and seemed to regard it as essential mostly in the domain of such as pure logic, in

connection to logical proofs.

Human intuition is of course a phrase that like any
other phrase can be used emotionally, and indeed we see
that many have used, and do use, the word 'intuition'
simply to refer to a guess or an emotional judgement for
which we have little fact as basis.

In the opinion of this writer, intuition can be a mode
of observation which requires a particularly sensitive and
coherent and harmonious state of mind, in which a theory
is formed and a question asked in which there is a
conscious decision not to favour a particular outcome of
the question-asking process. In sustaining a clear idea
with a clear openness in a harmonious mind for a time, so
that the mind can be silent, and so that desires and
fears are kept suspended and not allowed to influence the
outcome, the mind can change state and a sense of
confirmation, or disconfirmation, can arise in the mind.
As this process is done again and again, from various
approaches relative to one and the same theme, over a good
period of time, a solid human intuition can be formed.
This supplements the process of sensory observation, and
somebody who does this coherently engages in what I call
a 'neo-popperian' scientific process. This neo-
popperian scientific process can be used to go through any
theme, including religious, spiritual, and metaphysical
themes, as well as themes involving beauty, the meaning
of work and life, and sexuality. It requires much time and
hard work and a very healthy life-style in which nutrtion
is given to the brain in a harmonious way and in a way
that does not involve much emotional intoxication (such as
that which certain forms of drugs like alcohol can induce
when used regularly), and so it is unusual and not to be
expected as the norm in a typical messy society in which
emphasis is on survival and in which politics typically
get emotional and biased and without any deep relationship
to reality.

It is obvious to those who go into the matter that even
the deceptively simple affair of 'sensory observation'
require something much similar to the intuition process
just outlined (for instance, sensory observation is
something that easily lead to reports that are biased by
desires of the observers; this bias can be on many

levels and requires expert mindfulness to challenge).

But the fact that a neo-popperian attitude is unusual in the present societies does not mean it has to be unusual in all societies. It has to be cultivated and after some millions of years, a neopopperian attitude may be the norm rather than the exception, and hopefully in a context that has many or most of the best flavours of what we call a 'democracy' about it, while less of the nonsensical and self-destructive aspects of egotistical political quarrel.

In order to tie up this discussion with pattern matching let me come with a analogy. As David Bohm liked to point out--and which he pointed out also the first time I discussed with him an analogy of the implicate order in his office in London, UK--any analogy has limits. In other words, analogies work at some point, but at other points they do not work; analogies are misleading if trusted too much.

The analogy I will come with here, is, therefore, like all other analogies, having severe limitations. And yet it is a particularly easy one to come with, given all we have discussed so far in this volume:

when, in a neopopperian attitude, you formulate a question, and let the surface of this question touch a broader reality so that an instance of confirmation, or of disconfirmation comes back to you, you have a certain process; and an analogy for this process is how a core pattern can be matched against a much larger photo. The core pattern is tiny and has few differentations in it, it is like a yes no question connected to a particular fairly simple form. You 'put it' to the photo, and 'shop around' in the photo--or rather you let the PC do it--and back comes the PC with a flag that says, 'yes, there is a match here'--in other words, an instance of confirmation; or, 'no, couldn't find a match right now',--a sort of instance of disconfirmation.

See the elegance of this analogy? And yet let us remember that an analogy always have limitations. And so when we formulate a question, we do so with the depths of our whole minds, and--unlike the core pattern on a computer-- our whole minds are infinite, and have an infinity that may meet, from within, the very infinitude of the universe

itself. There is nothing like this in the computer process, it is an entirely superficial and limited process in comparison.

However, it is interesting to see the similarity with the popperian and the neo-popperian gathering of instances of confirmation and disconfirmation: every time you let the PC have a GEM photo be checked up by, say, 50 different core patterns each of 35x35 simple pixels, you get some instances of match and/or lack of match. These instances have a value, and it may be sometimes easy and sometimes not so easy to interpret just what value, but every such checking has something to it--and something which is more or less analogous to how we get into touch with reality, and how we encourage a truthful process.

For to be truthful in our minds is about saying things like they are; and to say them like they are requires a healthy sense of sceptical wonder about how we acquire these instances of confirmation and disconfirmation about our viewpoints, and how we deal with these instances, and how much intellectual effort we put into putting them into perspective and evaluating how they might be interpreted differently, even widely differently, than what was believed at first.

The result of a truthful process in our mind is that of a greater movement of harmony in alignment with 'what is', instead of being cemented around certain ideas o 'what should be' that do not hold up given elementary observations and/or well-cultivated human intuitions.

In this sense, we can say that the noblest of the scientific approach joins with the noblest of the non-fanatical, non-fundamentalistic spiritual approach in being an approach in which we are in a perceptive, observant relationship with 'what is', which also can be characterized as a 'love of "what is"'. The ancient Greek word 'philosophy' has in it the word love, or philos, and the root '-sophy' indicates knowledge or wisdom. In putting love of reality first, we acquire wisdom; and so love of wisdom presupposes a love of reality; and a love of reality means that we must cultivated an unbiased process in which instances of both confirmation and of disconfirmation, both through the senses and through human mindful intuition, are evaluated as dispassionately as we

can, intent on acquiring ever-better 'maps' of reality;
and enjoying, as side-effects, that our minds get
exceptionally bright and lucid, that our emotions are
guided by the joy of coherence rather than by reckless
seeking for localized trivial pleasures like that of foods
we don't need. Indeed, as Albert Einstein sometimes
wrote about, there is a 'cosmic feeling' about being
scientific.

This is science, neo-popperian science, not as a
profession, not as a job, not as something defined by an
institution or ruled over by a university or the groups in
charge of dictionaries or laboratories or factories; but
we are talking of a scientific process that is also, for
the individual who works in any field whatsoever, a
process of being truthful, nurturing a truthful process in
the inner light of attention. In this sense, there is
never any question of 'leaving truth behind', as is
indicated in the shallow phrase 'post-truth', that some,
on occasion, suggests 'is the new phase in which we are
in'. Truth is about life; it is only a dead mind--ie, a
mind that is no longer operational and no longer serves
life, that in any way can be 'post-truth'.

Truth is a question of relating to the Now, and to
relate to the Now means banishing all authorities inside
human thought that prevents perception, whether as
imagined holy scriptures or imagined flawless scienitifc
theories or worldviews or spiritual methods, techniques
and ideologies. All things in the mind must be submitted
to the altar of personal perception, and every narrative
must be doggedly dissolved before it is possibly put
together again by the gold that has been panned out of it.

This Now contains not just manifest but also subtle
dimensions, including dimensions involving processes and
timing and more; it is not the shallow concept of a now or
present in contrast to the equally shallow concepts of a
future; rather, it is the Now that encompasses the
multiverse of visible as well as subtle processes; not as
necessarily as according to any scripture, whether
pantheistic or monotheistic. The exact structures of the
Now is forever open to be explored to those who take the
potential in the human mind for genuine intuition
seriously over a long time, and who successfully relate

to it in a neo-popperian way. This type of spiritual human being would be a new type: it would transcend the purported forms of 'enlightenment' of the past, and it would challenge the myths of the various approaches to the universe in the present spiritual as well as philosophical and political worldviews.

Reaching such an enlightenment, it appears to this author, is not a question of pursuing whether a personal or collective programme, whether of personal meditation or of collective 'dialogue' (and it is certainly not the particular pathway of group dialogue as set forth by the ageing David Bohm; see my analysis of the failure of Bohm's take on dialogue in other writings). It is also not something that can be a programme of medicine, technology or science, not even such as a lofty science as that of blending meditation and tantrism with such as EEG measurements. Thus, this is not about the ideas of the 'trans-human' or the 'cybernetic human being' either: the solution doesn't exist within the finiteness of human science and its technology.

Instead, it is the proposal (indeed, the intuitive proposal) of this author that such an enlightenment can only be a side-product rather than an intended result, and not just of one human being, but of many, and not just over one life-time of human beings, but over very many indeed; a side-product not as much of intending any form of 'enlightenment' (because that is too easily a too egotistical norm or ideal, or else a too unrealistic one-- even if only intended in a relative sense), as of working with something beautiful and holistic, in a combination of earning a personal livelihood with generating something radiating the integrity of objective beauty in society. This falls in under the philosophical theme of "beautiful actions". You see this radiance in the gardener whose flowers exhibit an excellence of beauty directly related the the intent of this gardener: this is a form of intent that does not need any too much conscious thought about any form of 'enlightenment', while it is also clear that it is not nearly as self-centered and, hence, un-enlightened, as the hunt for easy rewards from society unto oneself.

The jobs that are offered to society and, through the

education processes, to the young of society, are,
however, rarely offering the combination that is here
required: that of a first-hand type of quality orientation
--or beauty orientation--together with a realistic chance
of earning a livelihood by sticking to this intent in a
creative and dynamic and passionate manner over a good
deal of time. Instead, society rewards shallow
intentionality and indeed egotism; and so it is not
strange that, as a side-effect, cults devoted to a
fanatical idea of enlightenment arise, alongside a number
of so-called 'conspiracy' theories as to the 'real truth'
behind publically held assumptions in the mass media.

  The curing at a collective level goes together with a
curing at an individual level but it is something that
cannot be the programme of any cult, book or ideology in
the form of religion, therapy, philosophy or politics. The
intuition of this writer is that 'the cure will happen',
and that what is giving most peace of mind is a trust in
the sense that, speaking of the flow of millenia, there is
a degree of determinism towards events that tend to ful-
fill just what is right. This trust can be backed up by
concrete intuitions into the nature of reality and of God
etc: and it seems to this author to that without such a
trust, an individual will find herself or himself
struggling with personal anger and regret against society
quite regularly, finding it unyielding to the concerns
that this person has as uppermost. Indeed, it appears to
this author that anger is the dominant emotion in those
who can meaningfully be called 'atheists'. This anger may
be surmised to be spurred at a deep subconscious level in
the mind where there are perceptions that indicate that,
in fact, atheism is wrong and that the more true state of
mind is to attain to a belief in the sense of a
nonfanatical trust in the vast future of humanity, beyond
the survival questions connected to any mortal human
being. This vast future is a mystical whole that, through
meditation, can be sensed to be existing on a mental level
--and a deeper emotional level--through what we have
described as a 'the substance' of the mind, being of
essence different than that is matter. This substance
uphelds the point of view that manifest human lives ought
to be mortal and indeed it is through the constant

reincarnation of this ever-new substance of consciousness into ever-new young bodies in humanity that grows take place in consciousness of humanity; whereas the pursuit of some human bodies to reach indefinite life-extension or even 'immortality' is an uncalled-for hubris and a state of illusion that won't bear fruit for these individuals.

Of course, this author's set of intuitions may be far off the mark, when all comes to all. Like with any writer, for you as a reader to judge the integrity of the points of view in a book may take decades and more, and that presumes that there has been a clear enough communication that the ideas in fact were adequately coming through so that they could be evaluated meaningfully. My work with computers and computer language as an approach to provide some extra 'hard core' to otherwise 'softer' philosophical studies, in a way not characterized by the issues found to exist in so-called 'foundational mathematics' is so as to suggest a pathway in which we can communicate more clearly and with more ways to check what we are saying.

On the practical level, in these volumes, the first four volumes all have a strong element of programming, just for this reason. The fifth and completing book of the five volumes comprising Art of Thinking is dedicated to the theme of 'Beautiful Actions', and will speak about them with only hints of the technological aspects that have had so much space in the earlier volumes in this series, but will invoke the concept of sexuality connected also to meditation and to EEG brain wave research as one of its technological flavours.

We will reach the fifth volume after putting the pattern matching approaches in G15 PMN to good use in a setting in which the G15 PMN FCM framework is programmatically used so as to structure goals, priorities and tasks for a certain type of program. This program will operate on the modification of GEM photos, using also functions inside the G15 PMN GEM program (which is part of the standard G15 PMN platform), but in a way that is determined by pattern matching and by the 'fuzziness' of goals such as is the case for goals programmed into robots. In other words, we will have on the computer a sort of robotic action--not expressed through motors, and not with input from cameras --but expressed through modifications of a GEM photo that

can be inputted from any source. These modifications, like the motoric actiosn of a robot, have something 'tentative' about them and have to be read by engaging pattern matching again and again, in a process of approximating some goals.

By such a program, we are lining up a G15 PMN FCM framework that can be fairly directly extended to be the core of a program in a PC that is the computer 'brain' of a robot, but without leaving the abstraction of the subject, and without getting dragged into the often very time-consuming and complex engineering features of getting motoric electronics to communicate elegantly with a digital program. This, it is suitable for the Art of Thinking series to also look into how FCM can handle the variety of 'sorting goals' and handling constraints and priorities and implement actions when the results are not garanteed--such as is the typical situation for robots-- because it sheds light not just on an important form of programming in society, but also gives us new metaphors and analogies for how we sometimes structure tasks in our own real minds.

CHAPTER 6: BEAUTY IS THE ESSENCE OF EXISTENCE

You who have spent some time with this Art of Thinking
series may also have done a little, or possibly much,
programming. Suppose you attain a mastership in
programming, so that you can teach others to program. As
a top programmer, you know that only a beautiful program
is a good program. Suppose you are also a compassionate,
kind person; you don't want to insult people.

  So, when your pupils, come to you with ugly programs,
programs full of errors and that, due to their ugliness,
cannot be corrected, are you going to say, "Oh, that's
lovely programs you have made there. Just how they ought
to be! How strange that the computer don't accept it. Must
be something with the electricity today; or possibly the
humidity causes the electronics to act funnily!"

  No, due to your compassion you will speak to them about
the importance of beauty; and encourage them to use their
technical skills while aided by an intent in beauty, and
rebuild their programs. They will work, and there never
was a problem with electricity nor with humidity. The
compassionate stance is to risk being honest enough about

the essential value of beauty. It may feel unpleasant for
a moment to engage in a talk of realities, but it saves
your pupils for future pains; for illusions can be
cultivated only if one accepts their future pains. The joy
of the mind depends on a cultivation, even a worship, of
beauty. That creates an order that is healthy, strong and
substantial.

And yes, the theme of beauty doesn't merely concern how
to construct programs. One can pretend that 'everything is
beautiful', and one can pretend that 'beauty doesn't
matter', and indeed this is part of rather dominant
political worldviews at present, on this over-populated,
messy planet, so full of wars and conflict, so intense in
destructiveness of its lovely Nature. There is much beauty
on this planet, but there is a vast swath of opinion-
makers who are nothing less than aggressive against beauty
--unless they can redefine 'beauty' to be anything they
feel like at the moment.

It is easy to understand how one might confuse the
attitude that 'beauty doesn't matter' or that 'everything
is beautiful' with compassion. It is much more pleasant to
disregard beauty, especially when it is unattainable in a
certain aspect or area for someone.

And what we find, as a result of this, is an aggressive
attitude being cultivated among many people against beauty
as ideal; but not only against beauty as ideal, but also
against those who, perhaps because they try and make a
living out of radiating beauty and being fashion models,
seek to express the beauty they have and avoid expressions
that do not have beauty in them. There is a certain
political/emotional stance that sees such an attitude--a
beautiful person wishing to express her or his beauty--
as 'arrogant'. Who is it arrogant against? Presumably it
is supposedly arrogant against other people, with whom
fate have distributed less lucky genes. And it is this
underlaying sense of whether life is 'fair' or not that
adds fuel to the aggressiveness that beautiful people
easily can feel against them. This is accentuated in
situations of poverty, where a beautiful person is stuck
with some others who may act aggressively as soon as the
beauty is expressed. It may be physically dangerous for
the beautiful person to radiate beauty; and the poverty

acts as a mud, dragging a beautiful person into having to
cover up beauty so as not to offend the egotists on whom
that person depends. The arrogance, of course, lies in
those who are in denial of the importance of beauty; and
by denying the beautiful person from unfolding herself
in society they are denying society something of the
energy of myth, the muselike energy that some people can
--and should--radiate. Beauty sets things in action;
beauty moves things; beauty shapes things; beauty makes
sure that structures of elegance arise where there
otherwise would have been just sand, just powder; beauty
keeps life alive.

  How can it in any way be 'unfair' that beauty is more
in some people's bodies than in others? If it is all
equal, it doesn't exist. It is a creative diversity of
beauty possibilities, both in movement and body shape, in
voice and in the music of career and actions, both in what
is expressed as art and how one carries oneself eg in
front of a camera. And in every such avenue in which
beauty, human beauty inclusive, can exist, there is not
just one form of beauty, but several: which is not the
same as to say that 'everything is beautiful'. Far from
it: but beauty is not just one ideal, not just one set of
perfect forms. It is a higher form of wholeness, it is
esthetics--and 'esthetics' is an interesting word as it in
Greek both means experience and beautiful. What is
beautiful is experiencable: it exists; it is the essence,
we might postulate, of that which exists. Beauty is the
great motivating energy, it is what makes things happen:
whereas aggressiveness against beauty is a virus in the
personality, a temporary state of mind, filled with
illusion, and which at some stage must yield.

  Like the concept of infinity, the exploration into
beauty has no end to it, and involves the mind in such a
deep (and self-referential) way that it is important to
engage in it in limited doses of time pr month. One cannot
'marry' the concept of beauty--not unless one is at least
a little bit mad--nor does it make sense to have it as
etiquette over one's work or hanging over the door as a
statement of one's only concern in life. Beauty is too
powerful a concept that a mind can survive a constant
focus on it. And if you don't believe that beauty is such

a strong concept, try and forget about beauty for a while. Disregard it. Or imagine that you have "got it" in a box, settled it, solved it, put it into a formula, made it easy--cut'n'dried, no longer dependent on bouts of enthusiasm.

   Walk around and do your things and imagine that you are in such a way 'beyond beauty' and, sooner or later, one day not longer after you have taken such a stand, you will see--maybe for just some minutes, but it's enough-- something so earth-shatteringly beautiful that you feel that it literally ends your mind, your self, your ego. It draws you out of your illusions. Whatever it is--a photo, a real life experience, perhaps the face of a human being, --when that experience erupts, it is a killer of illusions and a total destruction of the ego-pattern that believed it had 'captured' beauty in any way. The fight within your mind that may then arise can lead to a vast sense of sorrow. You may try and forget the experience but still you find that you cannot return to your former views; and you may fight within you against letting new views about beauty arise.

   The more enlightened approach you can take is to realize that beauty, like infinity, defies definition. You cannot hold absolute beauty in your hand. It is not to be kept in a cage in the mind. And yet it can shine on you, and, what's more, it will indeed shine on you--regularly, or irregularly, in whatever pulse that synchronicity has it in for you.

CHAPTER 7: BEING GENEROUS TO YOUR SUDDEN SENSE OF BEAUTY

In the Art of Thinking series, we are, from the outset,
dedicating ourselves to refining our intellects, but
thinking is not just about having a good intellect; the
art of thinking is also an enquiry into the energy and
myth of art; an enquiry that does not merely lead to an
intellectual structure, or set of statements, or even

decisions. The enquiry is like a flame that keeps us awake and alive and real to our own enthusiasm, and that can make us create something splendid; it is partly such enquiries that is the real motor of the best and most creative parts of small business markets. Economy, when it makes good sense, has rules that prevents dinosauric companies; rules that invoke a sense of fairness; rules that do not overly benefit landlords or a certain type of companies; but rules that ensure that there is a level field, an arena of fairness. Once the rules of the game are clear, the game can start. Of course, in practise, in the history of humanity, the games of economy have often started before the rules were made, and the rules were made sloppily and various forms of unfairness came into being. That is not to say that money is in any way 'evil'; money is good when the rules governing the markets are good; money is a force that can be put to good use when the intents are good and when the conditions are good.

Money flows from people to people and onwards to yet more people, as signs of enthusiasm and need, and in ways that involve a constant fluctuation of prices according also to availability.

Once we realize that enthusiasm is an essential part of the market economy, and also of society, and that rules created in the society ought to respect the conditions for allowing enthusiasm to arise--such as by not having structures that easily lead to a sense of unfairness, and by not letting police have overly privacy-intrusive surveillance methods--we see that the exploration of enthusiasm is important not only personally, but also so that we understand more of what makes society alive and indeed also what makes a good society.

The reader may or may not find herself or himself in a society that at the moment feels fair: however there may be little that can be done by a normal citizen in order to change society at present, and even if there is an impulse towards making a change, it is usually also a great idea to explore how to make the best of the present situation.

In exploring your personal enthusiasm, you may find that you are increasing your understanding of that which leads you to do interesting, and rewarding things, also in

economical terms; and in the long term, that is a real contribution to an evolution of society in the right direction, whether it takes a century or a day.

Enthusiasm and inspiration and motivational energy are concepts that for some, at some time, have little or no reference. For instance, if a person has, for a long time, assumed that enthusiasm can only come from a certain form of self-cultivation, and this self-cultivation again dependent on certain features that are no longer present in this person's life, a constant sense of depression may assail the person, and it seems that only drugs and such can simulate any element of enthusiasm and that real enthusiasm is gone for good for this person.

If one speaks to such a person that--eg as the Christian Bible does--'you must love God' and all will be will, the person may reply, 'I no longer have energy to love anything'. The Bible further suggests that God is the most splendid, awesome, beautiful, fantastic, and power-ful, and the person may reply, 'Very nice, but my mind is not kicking into gears on hearing such big words.'

Other people, less oriented towards the idea of spiritual love, may suggest, on a more social basis, that 'love is the answer'. They may say to the person, for instance, 'just love more!'. And again the person may reply, "My capacity for love seems weak; and I do not know that any love would be reciprocated anyway, so what's the point?".

A person who is cultivating a sort of 'imploding' sort of series of thoughts may not be able to go out of the circle of self-destructiveness; may not be able to recover the energy of generosity, playfulness and creative intelligence suitable for doing something in the world and indeed also radiating love. Some people may be in a state that has degenerated so that the best one can hope for is that they find a peacefulness with glimpses of some happiness in it, rather than any true rebirth of enthusiasm; and with a perspective of reincarnation, they will nevertheless have a future at the soul-level, even if the body is no longer willing.

However, many people of obviously great potential may find themselves in a groove of moody thoughts and to these to whom there is a real chance of moving beyond the

self-destructiveness the discourses about the energy of
enthusiasm may make more sense. And in this regard I have
a postulate:

  * it is beauty, not love, nor truth, that is the core
human energy and the core human motivation factor and the
core also of what leads to love and to truth

  A spiritual person may then add, and God and his divine
beings are the most beautiful, so by being oriented
towards them, there is the highest energy.

  But the statement is intended to stand also without
giving it a spiritual flavour at once. It is meant as a
practical map, ie, how energy can be recovered in a young,
fit person who has potential to be very alive and to be so
in a beautiful way and do something in society that spurs
others into encountering beauty.

  The beauty intent is a complicated one for some, and for
most to whom it is complicated, the sexual hormones in the
teens add to the complication. For the sexual actviation
makes beauty of some forms seem Awesome, with capital A.
And as soon as some forms of beauty singles themselves as
ultimate and top, the person's well-being may suddenly
come to depend on whether such beauty indeed is within
practical experiencable reach or not. If not, the teen,
obsessed with what appears to be unattainable shapes of
beauty belonging to some, but not to themselves, may
become the apathic teen; and for some of these, obesity
comes in because over-eating gives a temporary pleasure
that may seem like the only remedy within reach against
the furious pain of not getting the more important things
right. As soon as obesity covers the sensual skinny shapes
of a beautiful teen with needless fat, there may be years
before this body is able to recover much of its splendid-
ness, and the challenge for a good society must be also
to prevent childhood and teen obesity at all costs due to
how much more complicated things get as a result.

  Part of the solution lies in focussing on the
proposition above: --by realizing that beauty is the
source of energy, we must ask: how do you stimulate fully
and richly to the experience of beauty in a way that
actually motivates the person? In the case of the teen
who is sexually living in self-condemnation, and to whom
beauty is intrinsically a sexual topic, it would be also a

question of how to let the sexual aspects of the persona meet with the beauty experience in a positive way. There is one proven way in which not just teens, but any fit person can connect such as visual experience of beauty to a sexual experience, and that is by 'self-love', which also is called 'masturbation'. Whatever we think about these concepts to begin with, let us look at them from a distance, rationally: we are speaking of a stimuli of a coherent rhythmic kind given by the body to itself, in which certain nerve centres known to be connected to the sexual sensations in the mind are getting activation. This activation takes place while the person is watching such as photos in which there is such as beautiful faces, beautiful bodies, with clothes and sometimes without clothes, of various types, but healthy, fit, and exhibiting a diversity of beauty. This total experience is further enhanced by the presence of musical sounds, by good scents, by proper body positions and movements, and can also take place with other people with whom one is in love.

The 'self-love' is therefore not in opposition to 'love' as such: it is rather one way to start the energy: and it uses the most powerful areas of the brain, the visual and the sexual, in a musical combination to activate.

What tend to happen as sexual stimulation through self-love in the visual presence of beauty, and with suitable music etc also being present, is allowed to unfold and deepen is that 'the sense of life as good' grows in the mind in those very minutes. The narrow circles of 'likes' change and expand. Much more becomes likeable, even as perhaps also taste is refined and one finds that a slender body is more attractive because it radiates more health than the chubby body whose interesting muscle structure is not shown because of the layers of fat.

In allowing the perception of human beauty to deepen, not just in a chase for a release, for orgasm, but as a process which is intellectual and energizing and also a certain type of physical exercise, by engaging in such a self-love process while a vast variety of visual experiences are explored, the brain/mind change state. It is not merely existing in that which classical EEG studies called 'beta' wave region--the fairly incoherent

spurts of short-wavelength activity in the 30-40 Hertz
region that mostly all adults in mostly all confused,
modern societies have as a general rule in daily life,
with a normally frustrated outlook on life.

The brain/mind state changes to more coherent and more
long-wavelength activity in which the energies can be
psychologically, inwardly experience to be less in
internal fight and more engaged in a throbbing sense of
support of good visions of life, a sense of beauty.

This sense of beauty, which may come upon a person
entirely without the use of pornography and also entirely
without the use of masturbation or sex in any form, will
however easily remain after the masturbation and after
the use of pornography and be experienced as a strong
current of beauty that has its own voice and its own
impulses and its own enthusiasm. We who are exploring the
art of thinking should not be arrogant relative to the
vast importance that the human body has a way to invoke
energies when its energies are low; we should not be
arrogant as to the importance of sexual hormones for a
lively mind; and to stimulate them in the right way
together with a truly healthy and fit and rich visual
stimuli for what human body and unfoldment and life can
be all about. In not falling into the traps of traditional
condemnation whether or porn or masturbation, we are able
to see that we are each born with a capacity to raise
ourselves out of an apathic energy and into an energy in
which our sense and thirst for beauty is awakened in us.

Once our intent of beauty is felt as rushing through
us, inside us, it is possible for this beauty to express
itself as an enthusiasm also when there is no obvious
ego-benefit for it to so express itself. And this is, I
think, where a number of spiritual teachers in the past
has missed the point when they were putting up love as the
highest, and mentioned beauty 'further down the list', as
it were. It is not that we get any way by suggesting to
people, 'try to love unselfishly', or 'why don't you kiss
somebody who is talking badly about you'. Once there is a
clan of unselfish love, there will be a counter-clan,
with a counter-narrative, speaking of selfish love as the
thing to cultivate.

And it really doesn't matter very much what some people

say that 'should be cultivated' as for love. Love is much more intense than such moral predicaments.

Our passionate exploration rather ought to be, from what does a truly intelligent energy of love, a fountain of love--selfish or not, but astounding and grand and as magical as we know love can be--where does such a love come from? It doesn't come from priests talking about the glory of heaven or the pains of hell, it doesn't come from a cultivation of badness or ugliness or the distasteful as some musicians would seem to have it; it doesn't come from practising endless repetition of Hare Krishna or some other nice human name.

Rather, the gorgeous energy of love comes from our sense of beauty; and our sense of beauty comes from our cultivation of that sense of beauty.

CHAPTER 8: FROM SELF-LOVE TO LOVE

The title of this chapter is imprecise. It sounds as is it
is about going from love 'of' oneself to love 'of' others.
That is not what it is about. It is about going from a
sexual loving action which can be practised while one is
alone, as in meditation, but which may be practised with
others; over to a love that is with one or more others, as
a sexual action that is more sex than meditation.

  The first form is not merely self-stimulation,
erotically, but, the way we have talked about in the
previous chapter, an exploration of the conjunction of the
visual, the musical, and the sexual--and with other
sensory modi involved as well--in which one can be by
oneself. Mere physiological masturbation is not a totally
engaging event for the human body; it is not a cultivation
of beauty such as leads to enhanced energy and increased
mental presence and indeed also enhanced capacity to love,
think, be intuitive and powerful and creative in action in
society.

  Rather, for those who are so lucky that they are born
into a society in which there is a rich availability of
such as music and beauty photography, nude as well as with
clothes on, in sexual action as well as in any other
action, they have the option of stimulating the fullness
of the sexual experience of beauty in a way that can take
them to new ecstasies and heights without too much

thinking about oneself. It is not all about imagining
oneself into various sexual positions; it is about the
experience of beauty in a sexual way,--objectively, the
beauty of others; to work up a sexual mood which is such
that it gets a positive kick out of the experience, also
selflessly, of beauty.

This experience of beauty sexually means that there is
a constant expansion of the perception of what beauty is;
a constantly refinement of both likes and dislikes; a
deepening of the artistic understanding and realization of
such as the fractal proporties of a photo and the
presence of spirals and golden ratios in it. It is also a
sense that beauty is not a mechanical thing, but
pertaining to something deeply alive about the world; that
the fact of being "muselike" for mortal human beings is an
ephemeral thing, not captured in any formula.

In having many thousands of beauty or near-beauty
photographs available, in having sensual, trance-oriented,
dance-oriented music, and in blending this with a sense
of exploration of life, of people's emotions, also
telepathically of attractive other people's attractions,
one or more person can spend time in a meditative,
sexual enquiry that is both a physiological masturbation
and also a throbbing meditation engaging all the brain.

Whether there is but one, or more than one, physical
persons present do not deeply change the fact that such
masturbation is also a throbbing beauty contemplation and
a growth of sex hormones and a re-coherenzing of brain.

Charged up, being thus highly sexed, having activation
of the body in various ways--not just this or that zone,
the labia minora, the clit, the breasts, the lips, the
earlobes, but all over the body, even the sense of the
space around the body having a sense of sex about it,
there is a wonderful starting-point for doing other things
--and this includes engaging in sex, in physical love, in
which the quantity of stimuli around that action may be
not so intense. It is not necessary that the stimuli in
the environment are as rich in love, because the
foundation of the type of self-love we just sketched
ensures that the mind is carrying its own smorgasboard
of stimulation.

In going from the activity of self-love, to the

activity of love, we are going from a foundation of
abundance and generosity in energy, to an expression of
this energy. This is something very different than
seeking out another person to 'get some satisfaction'.
Instead, it is a postulate that sex with others is best
when it is a foundation of having self-sex; because in
such a circumstance, the energy of playfulness is already
there, the sense of joy is already there, and that joy
has its own intelligence and perceives readily how one can
enhance the happiness of others better.

   In many societies in the past history of humanity, sex
expressed freely has been considered an impulse of anarchy
and something that can lead to a breakdown of some
patterns of society that are considered fundamental of it.
In this regard, churches and states of various kinds have
sought to institutionalize sex and love; and as a
challenge to this, phenomena such as pansexuality and
polyamory have arosen and achieved mainstream popularity.

   To simplify, a society is either chiefly oriented
towards the young and sexy in an abundance mode, or it is
oriented towards the elderly and unfit seeking some
degree of satisfaction in a deficiency mode. When the
elderly have the upper hand, they want the security of
stability in relationships and it is typical that the old
do not want to see liberated sexual activity in the young
but rather want to put a structure on all such activity.
It is through the deficiency mode of the elderly that the
marriage concept has arosen. There is no necessity--as
the hippie movements in the 1960s and 1970s did begin to
show--in having marriage as the only loving context for
the building of art, meaningful and peaceful community
efforts, and the bringing-up of the new generation.
Marriage is but a certain type of institution that fits a
degenerate, narrow view of beauty and that fits with an
attitude that essentially assumes that 'one person can
only really love one other person'--which is, of course,
in most reflected philosophical perspectives, absurd.

   The other alternative is to see marriage as a practical
institution while love can be expressed to side-affairs
of various kinds; but as long as marriage has the upper
hand in terms of institutional preference in society, as
long as the status and the money chiefly belongs to the

systems which call on marriage as a foundation, this is
other than a whole-hearted and coherent solution. What is
more realistic is to see love as a core energy in humanity
that is too important to be tied up to societal
institutionalizations of any kind, and that it is an
off-spring of the cultivation of beauty; a cultivation
that is only true if it is as diverse and varied as the
mental energy of an individual is from one day to the next
--even from one hour to the next.

   The stability of love in a society, it seems to this
writer, is dependent on the stability of the cultivation
of beauty in an intense yet varied way, coupled with a
decided freedom from fixed relationships of love. Put
simply, it is only when love is liberated from loyalty to
one or two or a group of people--fully liberated--that
society can have the self-renewing and self-rejuvenating
energy and coherence of love. In designing such a society,
we may be honoring the art of thinking and the joy, and
truthfulness, of the young of society; but we may find
that traditional values and concerns are not compatible
with this. The hippies of the 1960s and 1970s are
notorious for trying to implement a marxist perspective
together with their expressed freedom to love; they are
also notorious for not implementing properly a platform of
hygiene that could ensure lasting health of its
participants; and furthermore they are notorious for
sometimes going into silly extremes like doing heavy drugs
like LSD often or like rolling into simple-minded hindu
cults in which rather irrational worldviews were brought
in as a spiritual alternative to the marxist atheist view.

   In all these experiments, however, the fact is that
grand esthetics emerged from the 1960s and 1970s, and that
--for the first time in the history of Western Europe--
there was a consistent phase of freedom for the
cultivation of young beauty and sexuality, both as self-
love and as love, leading to a number of coherent results
that have been shaping much ever since.

   In the art of thinking, we can take into consideration
the intense complexities of finding what might seem to be
adequate foundational rules of a society and also how
complicated it may be to meaningfully implemented these
without a return whether to the 1930s style nazism or to

the 1970s style of marxism. Marxism had in it something
that nazism did not have in it: the important embracing of
all human beings, rather than the exclusion of jews; and
the embracing of shared properties and shared sexuality
and also a pan-sexuality and a bisexuality, rather than
the condemanation, that 1930s and 1940s nazism had, of
'abberant' sexualities.

When we explore, in the fifth volume, some of the brain
science connected to a diversity oriented type of sexual
love activities, which also include meditation, we will
talk over some of the statistical results found in an
early controversial book, the Sexual Behaviour in the
Human Female, by Alfred Kinsey and his group. The socalled
Kinsey Report, and this book from 1953, were part of the
sexual liberation 'bibles' of the 1960s and the 1970s; and
though much of its research is anedoctal, and though there
have been many accusations against the Kinsey group for
its strong inclusion in small children in its sexual
research, it is no question that their research on the
sexuality of both women and men, but especially women, as
depicted in the massive 800-plus volume from 1953, was a
milestone of sexual research and one that perhaps never
has been fully followed up, anywhere. Its results told of
the sexual appetites of both married and unmarried women,
young and not so young, in a way that carried tremendous
intellectual weight and that acted to destroy a number of
restricte narratives about women. As a result of Kinsey's
work, a woman's liberation took place; this movement,
which also got the name "feminism", eventually shed many
of its sexual features and became merely a form of
watered-down marxism with a focus on the female. As a
political movement, feminism in the early 21st century is
essentially unrelated to the actual liberation of women
that took place in the decades following Kinsey's work.

In exploring beautiful actions in the fifth volume, we
are spending time on these subjects as if society was
ready to be moulded and changed due to great coherent
philosophical insights.

In focussing on thinking clearly and coherent, apart
from what is politically realistic, we will sometimes
reach controversional standpoints--in the present context
--and sometimes reach merely confirmations of existing

trends, such as pansexuality--but apart from what is
realistic and what is controversial, it is the point of
view of this writer that it gives mental energy and
clarity to be honest to one's own perceptions. No matter
what your own intuitions and perceptions are, if you can
connect to them and refine them, you may find that you
can navigate your present society, at some point, possibly
much better than before. It is not about getting into
unrealistic expectations about societal change, or any
sort of wishful thinking. It is about getting into a sense
of what's what--and if society is false and at the moment
unchangable at such and such points, it is good to know
that is false before we launch a career or two or three.
We do need careers, we do need a livelihood, we do need
that people give us money and that we have respectability
to a good extent: so in being honest to our own
perceptions, we are maintaining our minds; but it may be
that we will not express our minds at some points in some
societies, simply in order to maintain livelihoods. This
is not the same as to be corrupt: it is rather to adopt
a-not-quite-forthright-attitude to the parts of society
that are false, in order that there will be both survival
and quality of life, even while honest thinking goes on.

SPACE FOR YOUR OWN NOTES

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