PATTERN THINKING – towards an algebra of the mind
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We all think that we think.
Indeed we all do think - but not much of our thinking is profound or original. Thinking needs a language of some sort, especially because much of it occurs between people rather than in a single person's mind. Even in our own mind much of our thinking uses words and pictures. We bring this about by clarity of expression – clear language or some kind of visual representation (drawings in the sand with sticks and all that follows). Today we are familiar with infographics, graphic recording and visual sense-making in particular, which give visual expression to the invisibly shifting patterns in our minds.

But beneath the visuals and the language, isn't all thinking a case of recognising or creating patterns? That might seem a fanciful exaggeration but it may be nearer the truth than first appears. As an infant we become familiar with a pattern of caring relationship (mother) to which we add, as we embrace daily objects, events and processes. Later our repertoire of pattern recognition extends to include observed phenomena, formal learning, recreational activities, social and professional skills.

Origins of thinking
Proto-data is everything that is un-thought (which is almost everything because the world works perfectly well without humans). By observation, we humans make data out of what was previously unobserved and, by differentiation and accumulation, transforms it into information. In our human affairs, we structure information to "make sense" and thereby create a pattern of thought. Structures or patterns of thought accumulate as knowledge and knowledge can be applied to bring about action in the world. When we do what we call thinking, without necessarily being conscious of it, we are re-arranging the patterns in our minds to form structures of meaning.

To take a simple example, we learn to recognise the pattern of what we name a chair. Chairs take widely different forms, all of which derive from, relate to or evoke a pattern in the mind of what is appropriate for humans to sit upon. In the same way our minds cognise all patterns that have names including, of course, many that are processes or situations rather than mere things. We name all regular patterns, simply because it gives us a quick form of reference – we language the patterns in our minds and thus learn to see doorways, footpaths, houses, horses, crowds and so on – many thousands of named familiar patterns.

Read the newspaper and each sentence (itself a pattern of thought) describes or interprets a pattern. In so far as we recognise the described pattern, we not only decode information but also we make sense of it. This sense-making is made possible largely when we make use of metaphor, a pattern that reminds us of a similar pattern from a different context, crystallised in our language.

Pattern is everywhere
Nature creates by using patterns, often fractal patterns that, by repetition, produce large and complex structures, both living and non-living; a leaf, a tree, a forest: an estuary, a mountain range: insects, animals, tribes. Nature's patterns interact and inter-relate in complex ways to create the world as we know it. Our knowing defines the world of patterns we recognise and thus we create our world, with an illusion of objectivity, as if it was THE world we knew, rather than merely a world we create.

Our thinking is a process of re-patterning the thoughts we articulate. We identify the pattern and sometimes change it to more closely fit the "truth" we are trying to grasp. Something has meaning only when we can relate it to a larger pattern or can "put it into context".

Just take a simple example: I decide to invite a friend to join me for dinner. That means I have a pattern by which I identify friend, a pattern I identify as dinner and a pattern that spells out what experience I might want to create by extending that which I call an invitation. According to our respective expectations the emergent phenomenon might or might not delight either or both of us. I am a pattern in my own mind (for me this is a very rich pattern that includes a lifetime of experiences, memories, relationships and behaviours, the totality of which I call "I").

We become attached to Thinking Patterns
As we go through life we accumulate countless patterns, occasionally abandoning some as we adopt and adapt to others.

Beliefs are high-level collections of thought patterns, often shared by groups of people and rather difficult to change, which filter many other patterns of thought. Lesser patterns are more fluid and sometimes ephemeral. For example, we have patterns associated with "work" and others associated with "leadership". Both are in flux, but for a while, we unquestioningly accept whatever is the prevailing pattern or "world view".

In our homes and our gardens we project pattern onto our surroundings; our designs, colour schemes, furnishings and so on, in a way we find pleasing. There is comfort and beauty in our processes of patterning our external environment to match something of our internal patterns. Onto practicality and convenience, we overlay devices, such as cycles, spirals, symmetry, repetition and balance, so that time and space fit our needs while being aesthetically satisfying.

Making Sense and Meaning-Making
In our ordinary mentation we do not need to be conscious of working with patterns, constantly mapping and remapping like early explorers. We have names for the patterns in our mind and use tools like logic and argument as aids to restructuring. In so far as we work to bring the patterns in our mind to more closely correspond with our experience, we are engaged in sense-making. Beyond that, whenever we attempt to create new patterns we engage in meaning making. We can usefully make a distinction between making sense of what we perceive to be (fitting new data into our existing pattern) and attempting to create what does not yet exist (using data to change our patterns and world-view).

Education
What we call "education" is a process for enriching the patterns in the minds of those we educate. More properly it is a process for stimulating pattern forming capability in those minds, so they can increasingly make sense and make meaning. Through conversation and dialogue the patterns of meaning can become mutually enriching. Culture in society is the flowering of such enrichment, facilitating the culturation of all members of that society - a social sharing of rich interacting patterns of meaning.

Negative patterns
Amongst the patterns we have accumulated, most of us have acquired some that are limiting or harmful. Patterns that tempt us to eat what is not good for us or too often to drink to excess, for example.

Or maybe the pattern that predisposes us to get angry with people we do not know but we deem to be degrading our culture. Patterns that stop us being as successful as we might be or that make us cruel to our own children. Patterns that make us poor judges of other people's behaviour or prejudice our choice of friends.

Sometimes deep and complex, negative patterns permeate our minds like cracks in marble, colouring our perspectives and our decisions in ways which would shock us if they were conscious. We live in a cracked world. It may be where the light gets in - or might equally be where the dark seeps out. There are mind patterns not of our own making that operate internationally over long periods of time – consider the idea of colonialism as an example: that believing ourselves superior we could relieve people of their ancestral lands and make them slaves to our own economic system. Patterns in the mind have serious consequences.

Scale
Everything may be related to everything else but some connections are closer than others. Sometimes the connection is directly causal, sometimes there is influence or dependency or sequencing. As we explore interconnections we can begin to map systems of inter-related patterns. Every system is composed of sub-systems and is itself part of a super-system, ad infinitum. Systems connect. This is not merely what exists in the world but also how we pattern what is in the world within our mind. So the patterning in our minds is a reflection (sometimes a poor one) of the patterning of systems in the world that appears to be "out there".

Larger scale patterns sometimes organise smaller scale patterns within them. For instance a belief system will shape many sub-systems within it. Capitalism, for example, appears "obvious" but is no more than a belief that currently dominates the world.

Perceptions internally reflect phenomena
We can assume that some patterns are trivial, small in scale and of little influence beyond personal behaviour (say a preference for sweets acquired in childhood). I have a pattern for how to boil an egg.

Other patterns have more significance –complex patterns that manifest as "dinner party", knowledge of design techniques or a belief in spiritual wellbeing, for example.

For the most part the patterns in our mind are not made explicit. We argue with people who have patterns different from our own and we try to shape other people's patterns by influence and persuasion. Yet we rarely recognise that we are engaged in pattern making. We may even be incapable of making the patterns in our mind explicit and they will remain unconscious, embodied and tacit.

If we can make some of the patterns in our minds explicit and share that process with others, we could collaborate more effectively. Thus we might significantly reduce misunderstanding and conflict. At the same time we can utilise our diversity of skill and experience in order to create. By the same token we might shift our expenditure of energy away from pre-occupation with materialism, consumerism and unfulfilled desires, towards more abstract ends. There we find fulfilment, satisfaction and peace. Of course, these are only pattern concepts. You will need to reflect on whether there is merit in thinking about thinking in this way.

Worlds of Perception
Let's see what a hierarchy of patterns might comprise. I call this "Worlds of Perception" but our perceptions are not singular – we perceive what we can relate to the patterns of our experience.

Shall we consider, for a moment, that not all patterns are of the same substance. Each pattern is something we perceive but our perceptions have a very wide range, from the most concrete to the most abstract. Here is a rough schema that you can verify in your own experience.

- **Senses**
  Perceptions of physical phenomena brought to us by our senses - what sensory experience "is". We manifest patterns of behaviour in the way we do things. Transferability of skills is a meta-level. We call ingrained patterns habits.

- **Feelings**
  Direct perceptions of, or participation in, flows of energy towards and away from occurrences – over which we have limited control, although visions and ideas help give direction. We call ingrained patterns attitudes.

- **Cognition**
  Patterns crystallise as knowledge - practical know-how, professional know how, my history, my geographies, my relationships – and transfers between them.

Knowledge accumulates. Fixity of patterns we call assumptions

- **Ideas**
  Meta-knowing which organises. A grasp of higher orders of structure within what might become knowledge – seeing patterns of possibility. Frameworks that might make sense. Moderated by Values (which can be changed).

- **Visions**
  Anything that I can imagine, past present or future, even though it may have no utility or existence. Particularly tentative patterns of imagined future states of affairs, provisional until given substance by our intent.

- **Purposes**
  A high-level of intention. Decisions concerning direction within the patterns, establishing preferences, selecting what matters. A sense of purpose may require many visions and provide a guiding framework for all steps leading to action.

- **Potentialities**
  Scanning fields of emergent relationships between patterns as they interact, we can identify changes that represent opportunities or threats. We can hone such strategic awareness to amplify weak signals of impending futures, helping us determine useful purposes.

- **Spirit**
  Spirit of enterprise, spirit of collaboration, creative spirit etc. The capacity to view all the above dispassionately and to bring about changes of pattern. Attunement, by inspiration and reflection, to wider patterns of the cosmos, embracing spirituality, compassion and love.

As we become aware of such a hierarchy of perceptions we can learn how to navigate it – how to determine where we are at any moment and how to get to where we wish to be. Our perceptions move up and down the scale, from the most concrete to the most abstract and back again. Ideally all our actions would be inspired and thereby we would be effective.

From observation we are drawn to create ideas and visions. From inspiration we produce strategies and plans, tactics and action. This cycle is the breath of life in which we all participate.

The capability to be free in navigating this hierarchy is a sign of the mature mind; one that has inner freedom. Furthermore, such a hierarchy in our minds is a reflection of the world "out there" – and if it is so, is it wise to place so much emphasis on physical matters?

Explicit patterns can be explored

Infographics
When we want to write or when we want to explain or to communicate, some awareness of such patterns can be useful. Large amounts of complex information can be expressed visually in ways that make interpretation relatively easy. The advent of computer graphics has shifted the burden from mathematics to visual representation of data in ways that can make complex inter-relationships readily understandable. In skilled hands the overall pattern behind events is easily comprehensible and one understands how forces interact to produce results.

Visual Recording
If we want to facilitate a group of people in shared endeavour then it can be very helpful for them to see the patterns of their thinking, so they can check for alignment or learn from observing differing perspectives.

People attempt this using words and gestures and will also find it useful to employ pictures and diagrams - Powerpoint perhaps, but more so flipcharts and whiteboards. Increasingly, visual recording with a specialist graphic artist is being used to help such processes. It helps to see what you think – and helps more so if you can compare what you think with what others are thinking – differences or blank spaces then become areas of great interest. A shared visual record of what went on is a useful reminder.

Ref. www.linkedin.com/pulse/why-visual-sensemaking-different-from-graphic-recording-pastor

Visual Facilitation
The role of visual recorder can be extended as the recorder becomes adept at seeing what is going on in the interaction and can, in real time, feed back to the participants. Visual facilitation will also, based on experience, draw upon a repertoire of visual frameworks to guide people's thinking. Entire workshops can be developed from such frameworks to very good effect.

Brainstorming
Another popular technique, originating from Alex Osborn, invites people to externalise their thoughts in no specific pattern. Traditionally the output from brainstorming is subjected to filters in order to select the "best" ideas. There is not usually any process for bringing ideas into relationship, so filtering out the best often eliminates the creativity that new patterns of relationship might provoke.

People often summarise the process of brainstorming as:

1. Jot down the idea.
2. Categorise or classify ideas.
3. Label the categories.
4. Filter to select the best.

Such a mechanistic/administrator approach to idea generation can be useful but is also limiting. Not only does it tend to make the contributors passive but it also tends to fragmentation.

Mindmapping
This popular technique works by association, mostly in a tree-like branching form of pattern.

This is very similar to a filing system which is structured that way in order that information can be easily retrieved. Broad categories are sub-divided into sub-categories and then into detailed sub-sets – and so on. If you start with the trunk of a tree you can find your way eventually to the specific detail you are seeking. This works less well when you are on the end of a twig and wanting to relate to another twig far away. In any case, the patterning in our minds is often much more complex, so mind-mapping may unwittingly constrain the way ideas relate.

Systems Thinking

Where science depends upon analytic thinking to study the properties of parts, systems thinking studies how parts inter-relate to form whole systems – and how whole systems inter-relate. Systems thinkers usually model the system they are working with – i.e. they represent it graphically in all its detail, identifying the parts and their relationships along with the flows of energy and information by which it operates. They look at its inputs and outputs and at the controlling effects of feedback to either stabilise or amplify its functioning. Rather than merely understanding the parts, systems thinkers try to understand the whole-system functioning entity.

An Exercise

Write down everything that comes to mind if you were to be asked to create a new garden.

Try not to use buzzwords – indeed write a series of statements, each a separate idea, complete in itself, with a verb (e.g "This garden will be easy to maintain"). It's best to write each on a small card because the second part of the exercise is to move them around to make sense of them. Suppose you have 20 ideas, how will you arrange them to make sense? Some are more central to the task, perhaps. Some are maybe the results of others – say a plan will come after you have decided who the garden is for or where it is to be or how large it is and for what purpose. (if garden design does not appeal to you, choose another topic). See what pattern emerges, which will give you some idea of the pattern in your mind connected with gardens.

Visuals and graphics

As mentioned above, we can readily distinguish between info-graphics, graphic recording and visual facilitation, all of which are becoming increasingly popular.

Think of them as different stages: the first expertly interprets information graphically; the second creates a visual record of group interaction (usually colourful and memorable); the third uses visual media to actively assist the group's sense-making process. A further stage makes use of moveable objects so that the graphic representation of ideas can be manipulated by participants in their sense-making process. Examples of the latter include ICA's ToP, using sticky walls and Neuland's Pinboard, using cards and pins. One highly evolved form of this technique is known as Logovisual thinking (LVT), which arose from the Structural Thinking developed by J.G. Bennett in the '60s. and further developed through the turn of the century by Centre for Management Creativity.

LVT - Differentiate and integrate

Return for a moment to that exercise we did, externalising our ideas about garden design. Imagine now that several people were working on the topic. We could place all ideas, written on cards, onto a display surface. Once that is done people quickly de-identify with their own ideas and readily work together making sense of all the material, thus enriching he mix. One can make sense by applying frameworks but in its purest form we would intuitively cluster ideas that seem to bear a strong relationship to one another (very different from categorising). This might be aided by giving provisional titles to the clusters.

During this process we would clarify the meaning of each contribution and come to consensus on the clustering by means of many conversations.

Once clustered, the next step of the thinking process is to write epitomes in place of the titles. An epitome is a full statement with a verb that "stands for" all the content of the cluster. Writing epitomes is an important meaning-making step in which we make explicit the differentiation of meaning we achieved by means of clustering.

When we have written all epitomes we can duplicate them onto a new set of cards and work at the conceptual level of the epitomes, leaving behind all the detailed content of the clusters.

By thus shifting to a more abstract level of thinking, where we have to deal with fewer items, we are more easily able to grasp the whole of the topic and the dynamics of relationships between parts. If you are working on a whiteboard you can add lines that connect and note the kinds of relationship, including feedback. You might thus end up with a systems diagram of the object of your study.

A qualitative distinction

Note the differences between this process and what we described people commonly do when they brainstorm*:*

Brainstorm	LVT
1. Jot down the idea.	1. Express each idea completely (include a verb)
2. Categorise or classify ideas.	2. Differentiate into meaningful clusters
3. Label the categories.	3. Make epitomes for each cluster
4. Filter to select the best item	4. Integrate all the material into one whole

In brainstorming the facilitator will often run the show whereas in LVT the facilitator's role is to manage the rigour of the process, leaving manipulation of the content to the participants.

Algebra of mind

That great thinker, Gregory Bateson, seemed to anticipate LVT when he said, "*Structure is the algebra of that which is to be described. It is always one degree more abstract. Structure presumes a gathering and sorting of some of the infinite details, which can then be thrown away and summary statements offered in their place".
(Angels Fear page 152)*

Further stages of the LVT process can include ring-composition which brings sequence, structure and aesthetics into play to gain deeper understanding. The process works best with small groups and then their work can be assimilated so that very many people can be involved in achieving a single shared output.

Such complex, shared patterns of mind, enable people to collaborate creatively, using their common template to align individual actions as they come to realise their ideas - from their most abstract aspirations through strategies, plans and tactics into coordinated action in the concrete physical world.

In conclusion

We have seen that all our thinking is based on patterns of experience, many of which we can name, so they can be languaged (so we both know, for example, what we mean by a chair). The patterns that we co-create enable us to relate. Through relationship we can work together for our mutual benefit and the greater good, externalising our patterns through action. How can we learn to better integrate our thinking so that this Pattern Thinking capability contributes to successful society?