THE MIND'S EYE

IAN ROBERTSON

TRANSWORLD
BOOKS

about the book

A picture is worth a thousand words, or so they say. Yet our education, from earliest childhood, emphasizes the importance of words. We take the world before our eyes and define it in a verbal language, and in so doing, capture it, understand it and celebrate it. But there are costs, for in our reliance on the cool efficiency of language we have neglected the wordless ways of the brain.

Now, leading psychologist Ian Robertson reveals how the uniquely complex human mind is capable of the most exquisite images and visions and why visualization is about so much more than merely sight and the imagined. As he demonstrates so vividly in The Mind's Eye, it is also about the way we interact with the world through each of our five senses.

Here, through a variety of simple exercises and fascinating case studies, we discover how to:

* Improve our memory
* Boost creative thinking and problem-solving
* Learn powerful new ways to combat stress
* Fight physical pain and illness
* Enhance our sporting skills and strength

contents

the mind’s eye

an essential guide to boosting your mental power

IAN ROBERTSON

To my parents, Anne and John Robertson, with love and thanks

… and also to my dear Fiona, Deirdre, Ruairi and Niall.

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1

a word in your eye

The Cool Web

Children are dumb to say how hot the day is,
How hot the scent is of the summer rose,
How dreadful the black wastes of evening sky,
How dreadful the tall soldiers drumming by.

But we have speech, to chill the angry day,
And speech, to dull the rose's cruel scent.
We spell away the overhanging night,
We spell away the soldiers and the fright.

There's a cool web of language winds us in,
Retreat from too much joy or too much fear:
We grow sea-green at last and coldly die
In brininess and volubility.

But if we let our tongues lose self-possession,
Throwing off language and its watery clasp
Before our death, instead of when death comes,
Facing the wide glare of the children's day,
Facing the rose, the dark sky and the drums,
We shall go mad no doubt and die that way.

Robert Graves

Western societies have largely lost the ability to think in images rather than words. That, in a nutshell, is the argument of this book. In his poem ‘The Cool Web’, Robert Graves makes the point very elegantly, and as you’ll see if you read on, modern neuroscience backs him up.

Take a moment to think about the last time you ate an apple. When was it? Where were you? What kind of apple was it? It is likely that, as you did this, you relied on both words and images. But for many of you the images would have been pretty bloodless, and you probably re-created that event to a great extent with words – ‘Oh, I think it was on Sunday, and I was in the kitchen after lunch … it was a red apple.’

try this Now try to recall this event in a quite different way. Close your eyes and try to see the apple in your mind’s eye. Try to visualize its colour, the blemishes on its skin – the tilt of the stalk. Now imagine feeling the apple – its texture, little indentations, the odd bruise, the sheer hard, smooth roundness of it. Try to taste it next. Imagine its juicy, brittle skin yielding to your teeth, the sweet, acidy juices flowing over your tongue, the dissolving of the flesh into soft flakes and the sensation of swallowing. Finally, hear the apple – the juicy crunch as you break it with your teeth, the sound of your own chewing inside your head.

Visualizing eating an apple in this way is very different from remembering it casually as an event. It’s as different as someone telling you about the taste of some exotic tropical fruit compared with tasting it yourself. Yet it is the nature of words that they tend to transform experiences into a rather bloodless code that can starve our brains of the rich images that wordless imagining can evoke.

It’s artificial, of course, to separate words and images like this. Poems like ‘The Cool Web’ work precisely because the words trigger images as well as other word-thoughts. Yet most of us, most of the time – at work, home, watching TV, reading newspapers, studying, sitting in a traffic jam – don’t think in images nearly enough. Why should we? Language is

the great achievement of evolution – an essential ingredient in what makes human beings unique on the planet. But there are costs to the way we have grown dependent on the spoken and written word.

Imagery consists of the mental sights, sounds, smells, tastes, touch and other bodily sensations that we can re-create with incredible vividness in that private, infinite universe within our skulls. The human brain is the most complex object in the known universe and it has the most incredible abilities, some of which – like imagery – are underused.

Imagery is important, but in western culture, language is king. In school we steadily wrap our children's brains in the cool web of language – it would be terrible if we didn't, but there is a cost to everything. By neglecting imagery we risk the withering of a whole set of quite remarkable mental capacities. In this book I will give you the scientific evidence to back up these arguments, but I will also give you many exercises in imagery to try out. These exercises are designed to illustrate how the mind's eye works and to help you assess how well you can use it and what effects using it can have on your mind and body.

Children think mostly in images before word-dominated school clouds their mind's eye. That's why this book begins where Robert Graves's poem begins – with the child's mind and its sometimes joyful, sometimes terrifying, image-filled world, untamed by words. Why do most of us lose this powerful way of thinking as we grow up? And why is it we remember so little from before the age of four?

One consequence of the clouding over of the mind's eye is that we only 'see' a fraction of what is before our eyes. Most of the time we see, hear, feel, taste and smell what our brains *expect* rather than the sensations themselves. Much modern art tries to shock or surprise us out of these image-clouding mental habits into *seeing* more purely with the mind's eye, uncluttered by well-worn categories and labels.

When we cultivate imagery and visualization in the mind's eye, we use parts of our brain that are not triggered by verbal thoughts. But the moment we speak or think in words, we sabotage this power of the mind's eye. I'll show you in Chapter 6, for example, how self-professed but amateur wine connoisseurs can't tell wines apart if they talk about the wine while drinking it, but they can if they stay silent and let the taste imagery linger in their mind, unfettered by words.

Neuroscientists can now watch the mind's eye at work in the brain and see how it uses quite different parts of the brain from those we use for other types of thinking and remembering. This research reveals that the right half of our brain – which has a limited way with words – can 'know' things but be unable to 'say' them. To give an example, you may be good at visualizing the colour scheme of your new house but bad at working out in your mind whether the sofa will fit in the alcove: different parts of the brain control these different workings of the mind's eye.

In Chapter 3 – 'How your brain creates images' – I get down to the business of helping you assess how well you can visualize. Are you a verbalizer or visualizer; do you think mainly in words or images? How well can you mentally picture your best friend's face? Or the details of your front door? Can you imagine vividly the sound of a violin playing? How clearly can you 'feel' the imagined touch of someone's finger stroking your cheek? We all vary in how vividly we can create mental pictures in all the senses.

The more vivid a visualizer you are, then, on average, the better you will be at – to give a few examples – remembering your dreams, succumbing to hypnosis, and thinking creatively. The good news is that even if you are a poor visualizer you can train yourself to be better: deaf people, for instance, who learn a sign language that forces them to use mental maps and the mind's eye become much better at thinking in images. London taxi drivers have to

learn the spatial layout of London perfectly so that they can create the shortest route from any point of London to any other. A key brain area – the hippocampus – is enlarged in taxi drivers who have used their mind's eye in this way for many years, compared to their younger, less experienced colleagues. In other words, you can train your own mind by practising imagery, and the great thing about visualization is that you can do it anywhere – from the dentist's waiting room to sitting in a traffic jam.

The better you can use your mind's eye, the more creative you are likely to be: in Chapter 5 – 'Better imagery – more creativity' – you'll see that Albert Einstein went to a school that taught children to think in visual images. At the age of sixteen he used visual imagery to carry out a breakthrough 'thought-experiment' that laid the ground for the splitting of the atom. He famously declared: 'Words or language … do not seem to play any role in my mechanism of thought … 'my elements of thought are … images.'

As we progress I'll challenge your creativity by giving you problems to solve and will show you how using the mind's eye can help you come up with more novel answers. Word-free imagery is the surest way of escaping handicapping cliché and the leg-irons of mind-habit. I'll show you how logical-analytic thinking suits only certain types of problems. For more creative, intuitive-insightful thought, words can act as glue rather than grease in the cogwheels of thought. It is precisely these types of intuitive, creative thought processes that predict success in life better than standard, logical IQ-type tests – at least in people who are already above average in IQ. What's more, a famous study of world leaders showed that the higher their conventional IQ, the lower was their level of eminence as rated by independent experts!

In Chapter 6 – 'The landscapes of memory' – you'll see that you can use words or images, or both, when learning and remembering. Most people neglect the power of

visualization when trying to learn, yet when you use both words and pictures to remember information you are using extra brain areas and hence learn better. This is particularly important for older people because visual memory holds up better with age than language-based memory, yet older people mostly do not use this brain potential to help preserve their memories. You can train yourself to greatly improve your memory by using imagery.

Chapter 7 is about stress and the mind's eye. Our most extreme emotions – fear, joy, desire, anger, despair – are all linked to powerful images we visualize. I'll show you how, untamed, these images can worsen your anxiety, but when used and controlled they can also rein in negative emotions very powerfully indeed. Visualizers may be more vulnerable than verbalizers to long-lasting stress after a trauma because the trauma lives on in their mind's eye, perpetuated by their visualizing power. But fears are also best tackled in the mind's eye, and you can use visualization to change how you feel and overcome your fears.

Our cravings and mini-addictions are also incubated in the mind's eye. We visualize the sights, tastes, smells, sounds and touch of what we crave and in so doing cook up a greater desire, reducing our resistance. The more easily you can visualize and 'absorb' yourself in scenes or images, the more at risk you are of both allowing your fears to grow and strengthening your addictions. But you can also use the power of the mind's eye to help overcome addictions, through repeatedly imagining yourself reacting differently to the triggers that stimulate the craving.

We'll also see the part that visualization plays in health and immunity. Dramatic changes in your immune response – the ability of your body to fight disease – can become linked to particular triggers in your environment. In other words, your immune system can learn to weaken or strengthen according to the situation you are in. Take people

undergoing chemotherapy for cancer: they can start to feel sick even at the sight, smell or thought of the clinic where these nausea-inducing drugs are given. Visualizers' brains learn these kinds of link more readily than non-visualizers'. But they can also learn to use imagery to overcome these problems and to help fight illness. Visual imagery can help treat skin conditions such as psoriasis – the mind's eye can alter how the cells in the body react. Imagery can also be used to help control several different types of illness, including migraine – even in children. And people given imagery training before major surgery recovered better afterwards and have less pain.

Imagery can greatly enhance sporting skill and strength through shaping brain circuits. In Chapter 9 – 'Visions of Olympus' – we will see how visualization is used by almost all the world's leading athletes. The golfer Tiger Woods was taught by his father to visualize the ball rolling into the hole as he hunched over concentrating on his putt. The people who are best at practising their sport in their mind's eye tend to be the best achievers in anything from archery to tennis. You can even increase your physical strength purely by visualizing yourself doing the exercises.

Chapter 10 tackles the mysterious phenomenon of hypnosis. Recent neuroscience research has shown that hypnosis does indeed produce a change in brain functioning, particularly in the right half. If you 'see' a non-existent red apple under hypnotic suggestion, your brain will behave as if it is really seeing a red apple. Hypnosis can also reduce pain by changing your brain's response to the painful stimulus. Hypnosis relies heavily on the brain's capacity for imagery. The more vivid an imager you are, the better a subject of hypnosis you will tend to be.

What about the images that fill our dreams? This is a question for Chapter 11. There are two main kinds of dreams: those during rapid-eye-movement (REM) sleep, and those during non-REM sleep. In REM dreams, your capacity

for imagery is unleashed because of the changed brain chemistry of sleep, and also because the brain's managers – the frontal lobes – are switched off.

Finally, in Chapter 12 we'll see how images are central to many religious practices and beliefs, and the key to some of the most profound experiences in our lives. Practices like meditation produce distinct changes in the brain corresponding to what people experience during these exercises. Different states in the brain can correspond to profoundly different types of consciousness.

Imagery-based thought, emotionally evocative and often creative, if used sensibly can help you discover new strengths and overcome old weaknesses. We need to cultivate a balance between logical, language-based thought on one hand, and intuitive, imagery-based thought on the other. That is what I hope this book will help you achieve.

2

the watery clasp of language

It is 15,000 BC, chill dawn in a glacial wilderness. A young Cro-Magnon man crouches in the snow-flecked heather, staring fixedly at the deer. It stands etched on the luminescent mist, wide-eyed, nostrils flared to Paleolithic man's rank scent.

His smoke-blackened fingers dig unconsciously at the unyielding, frozen soil. Heart pounding, eyes flickering back and forth over the animal, his body is taut with their duet of mutual stillness. A mind full, quite full, of just this single image visualized at the crossroads of death and survival.

A hissing arc of birch and flint, the dull thwack, a scarlet, gorgeous spurt and the stone-deflected scream as it rears and falls. It scrabbles for purchase in its own vivid and mist-suspended remnants, which in just one small corner of the conscious universe stay high and gold and vivid.

Half-crouched with the burden of this image, he makes his way down the stone-strewn slopes, leaving the others with their bloody loads. He crawls past the women's questioning

eyes deep, deep into the darkest spaces of the cave. His eyes burn with the strain of carrying it.

Hunched and cramped in this unfrequented spot, before him the wall glows in a slit of light exhausted by its long penetration to this dark corner. His eyes spill the resurrected deer onto the wall and, with the reverence of hunger, he traces with sharpened charcoal the tense, still lines of this projected image of its final, earthly moment.

a glimpse into the paleolithic mind?

In southwestern France and northern Spain, the present-day Basque people who live there are the direct descendants of a genetically distinct line of humanity. The Basques' direct ancestors may well be Cro-Magnon man, the Paleolithic authors of the earliest known artistic pictorial depictions by mankind.

In the deep, dark caves of Lascaux, Altamira and other sites in these Basque regions, exquisitely painted and engraved outlines of deer, bison and other animals appear with breathtaking life-likeness. Beside them, though, matchstick humans prance awkwardly like the doodles of an infant. Why were these pre-historic artists so bad at drawing humans, but so good at drawing deer and bison?

Julian Jaynes of Princeton University suggested twenty years ago that these animal paintings weren't really 'art'.[1] Rather, he argued, they might be a mechanical tracing of a vivid mental image projected by the eyes and brain of the draughtsman onto the dim cave walls. This type of image – known as 'eidetic imagery' – is present in as many as 1 in 10 present-day children, but hardly ever in the modern adult. It's a special kind of mental imagery, not properly understood, where a near-photographic image can be stored in the brain and projected onto a wall or screen like a slide.

Jaynes thought that a hungry hunter who had just sat still in the heather for two hours before dawn would be particularly prone to this kind of imagery. This would be especially true if after all these hours of cold and boredom his adrenaline started to pump at the sight of a deer emerging out of the gloom. The unique brain chemistry caused by hunger and excitement could conceivably release these eidetic imagery abilities and the pictures that followed. What's more, the cinema-like darkness of the deepest cave recesses gave pretty good conditions for the 'projection' and copying of these mental images.

Imagery of all types seems to wither as our children grow up – including eidetic imagery. Is this because of our education system's focus on language? Let's take a look at the evidence.

imprints on the mind

Take another look at the picture of the horse at the beginning of this chapter. A four-year-old child, Nadia, drew this.[2] Nadia was an autistic child with very poor language ability, the strange mannerisms and obsessions that are common in autism, and a highly abnormal brain. At times she would have uncontrolled episodes of screaming and destructiveness, alternating with periods of lethargy, withdrawal and muteness. She was a clumsy child. What Nadia did have, however, was a narrow genius for drawing. After a single glance at a picture or figure, she could draw it with an almost Leonardo-type level of skill. Face pressed against the paper, her clumsiness temporarily abolished in her absorption, she would produce these wonderful drawings.

What was it like, inside Nadia's universe: was it a narrow funnel of raw, undiluted images, uncontaminated by

language? Maybe it was a coincidence that Nadia steadily lost her genius when she went to school at the age of seven. There, thanks to dedicated teaching, she learned how to spell out the world in words. Maybe Robert Graves's diagnosis is not correct – perhaps it was not the watery clasp of language that smothered these amazing images. But the bald fact is that when Nadia began to master the rudiments of language, her talent was extinguished.

Images tend to be destroyed by words – particularly eidetic images. To name the picture or the taste is to destroy it, often. Does Nadia give us a glimpse into an image-filled, wordless world that many children inhabit? Is it a glimpse into how it was for the Cro-Magnon draughtsman, cramped in the dark, damp corners of his cave?

Nadia is not a unique example of so-called savant genius – a rare talent standing alone among limited general mental capacities. There are many examples in the world of such *Rainman* figures – often autistic – with amazing talents for imagery, both visual and musical.

the wide glare of the child's day

The older we get, the faster time seems to pass. This is partly because it's harder and harder to have an experience that's completely new. Our brains are constantly comparing what's happening *now* with memories of similar types of situation we've known in the past. This is a pretty useful survival tool, because it stops us getting nasty surprises, and helps us learn from experience.

But there are – you've guessed it – costs. When you classify experiences like this, you begin to experience the 'class' and not the event. In other words, your conscious experience becomes once removed from the immediate sensation. 'Oh, I see the roses have come out' becomes a

classification of the experience one step away from leisurely, wordlessly staring at a single rose. I say leisurely, because it is a very automatic brain habit to classify experiences in this way, and you need time and effort to slip out of the classification mode into the wordless experience mode. Try it.

try this Lift your eyes from the page for a moment and look at some object around you – a chair, a cloud, a leaf, a face, a cup – anything. Look at it for a while and try to go beyond your normal 'oh, that's a chair' classifying response to it. Try to look at it as if it is unfamiliar, alien, and hence un-classifiable in words. Try not to describe it to yourself in words – rather, try to experience it through your senses. If you can, touch it, pick it up, and try also to avoid its classification through the sense of touch.

What classifying does is to make *categories* out of our experience. And the essence of categories is that they highlight the ways in which things or events are similar, and downplay the ways in which they are different. So, the more we categorize our experience, the more day-to-day events will seem repetitive and similar: this is a recipe for time racing by in a blur.

Words play a big part in categorization, but it's harder to categorize when you bypass words and use your brain's capacity for imagery. In the hectic, information-flooded lives we live, we rely more and more on mental categories to filter the rush of data at the gateways of our experience. Eating an apple, for instance, has become for most of us a barely attended category of eating experience, rather than the multichannel tidal wave of sensation that it can be.

The word processor I am writing on just now works a bit like the human brain. If I start to use a phrase that it recognizes as one I have used often before, it guesses the rest and completes it for me, saving my fingers the work of typing it all. Sometimes it is wrong, more often it just doesn't quite hit the mark. But even then sometimes, rather than correcting it, I think, 'OK, computer, that'll do – have it

your way.’ It’s a kind of laziness, I suppose – but it’s also efficient. After all, most of what we do, say and think is routine. The tramlines of habit and thought guide us round the swaying corners of life. Survival in the western world would be impossible without these rails of routine.

try this Our brains are predictive machines also. They make moment-to-moment forecasts just as my word processor does. Read this sentence:

> Fortunately for the drowning child, a woman on the beach had seen her and called the the rescue boat, which was soon on the scene.

No doubt some of you will have seen the error in this sentence, but many of you – probably most – will not. If you didn’t, have another look. Did you get it? There were two ‘the’s before ‘rescue’. The reason that many of you will not have noticed this is that your brains were acting just like my word processor – predicting what would be said, and seeing the prediction rather than the reality.

each one of us is blind

Imagine the following scene. You’re walking across the lobby of a big hotel when someone you don’t know comes up and asks you for directions. While you’re giving the directions, two men pass between you and the stranger, carrying a door. You think this is a bit rude, but they move on and you continue describing the way the stranger has to go. When you’ve finished, he thanks you and then says, ‘You’ve just taken part in a psychology experiment. Did you notice anything change after the two men passed with the door?’

‘No,’ you reply, puzzled. Then he tells you that he is not the man who originally asked for directions. That first man comes up to join you. You look at them side by side and they are completely different – different height, complexion, hair

colour, build and dress. ‘You’re joking,’ you say disbelievingly. ‘No, we’re not. The first of us walked off behind the door and the other slipped in in his place.’

This experiment, led by Harvard psychologist Daniel Simons, showed that roughly 50 per cent of people didn’t notice that in the course of a couple of seconds, the stranger they were talking to was replaced by a completely different-looking person.[3] How can this be? This ‘change blindness’ is another example of how much of the time we don’t really ‘see’ the world around us. When the stranger comes up for directions, we tend to treat him as another *category* – here is a stranger and I have to work out how to tell him how to get to where he wants to go.

The key here is *attention.* We are attending to the instructions and not to the person. In fact, the person is irrelevant to the task in hand. What’s more, in the jumble of experience that assails our eyes, we can’t possibly take all of it in. Hence our brains tend to ‘fill in’ – based on memory, stored images and experience – this flotsam of background information. But if we tend to project old stored categories onto the world rather than actually seeing the full detail of the scenes in front of us, why don’t we get knocked over by cars and buses, continually bump into tables, and ignore people we know when we see them in the street? Well, actually, people do all of these things from time to time, but for most of the time we manage to get around not too badly. This is because our brains are particularly sensitive to *changes* in scenes. So if the stranger you were talking to suddenly walked off and another replaced him, you would see the movements and other changes and would have no trouble noticing the impostor. But because the change happened behind the door the two men were carrying, at least half of the people’s brains didn’t detect it.

Magicians are masters at using this ‘change blindness’. If a card is quickly swopped while your eye is moving from one

position to another, then your brain probably won't notice the change. In other words, for the fraction of a second when your eyes are moving, you are effectively blind. Why then don't we experience the world as a sequence of flickering images interspersed by periods of blindness? We don't because our brains 'fill in' the gaps and smooth out the world with remembered categories and rough sketches of experience.

There are other examples of this. The same Harvard researchers showed people a video of a basketball game and asked them to count the number of passes made by one of the teams. A minute or so into the match, a man in a gorilla suit walked slowly across the court, passing in among the players. Though clearly visible for about 5 seconds, again only half the viewers noticed him. Watching the same game again, but without any particular task to do – such as counting passes – they saw the gorilla easily, and found it hard to believe that this was the same video they had watched a few moments before. Again this shows that we miss much – indeed most – of what is in front of our eyes, ears and other senses.

try this Wherever you are just now, pause for a few seconds. Make a note of all the different sounds you can hear. Don't give up after one or two: persist until you have a list of ten, twenty or more. Make yourself aware of the orchestra of sounds that has been tickling your eardrum but never reaching your conscious mind. At this moment I am writing this in the lobby of a busy conference suite. I have been aware of the piped music intermittently while writing, and now the hum of the floor polisher comes to attention. The clip-clop of heels on the polished floor, the hum of voices gradually becoming distinct individual voices as I attend to them … The grumble of a passing bus, the soft click of the keys on the keyboard and a faint hissing from the ventilation vent just above my head, and indeed I become aware of the soft ringing of a faint tinnitus in my ears … and so on.

Taking the time to observe reveals layer upon layer of sensation that is being ignored. You can do this in any

sense-channel: take a mundane piece of bread, and really *attend* to the sensations in your mind as you eat it. You will become aware of gradients of texture and taste that you have probably always ignored through the thousands of pieces of bread you have eaten in your life. Try your own body at this moment – bring it into awareness and suddenly become conscious of the huge barrage of sensations that you have not been attending to.

In other words, we are not only blind and deaf to most of what is going on around us, but we are also oblivious to the sensations in other senses and in our own bodies. Nadia seemed to be nearer the minutiae of her visual world than you and 1 are.

try this Ask a four- or five-year-old child to draw a horse for you. Compare it with Nadia's horse at the beginning of this chapter. What strikes you about the difference? Does it seem that the drawing was of what the child actually sees? Or does it look as if the child was drawing categories of horse-ness downloaded from general descriptions stored in memory?

I failed art at school. My seven-year-old son draws better than I do. Yet at a conference recently, during a tedious lecture, I found myself sketching someone's face. And I accidentally discovered something that I now realize every proper art teacher knows. I discovered that if you forget *what* it is you are drawing, and simply try to trace the lines and shades of the unnamed, uncategorized blob before your eyes, then you can get a likeness of sorts.

Now I am still no Leonardo, but that experience convinced me that to a considerable extent drawing is a skill that can be learned. Try it. But a precondition of learning that skill is shaking off the cool web of categorization. To draw you have to come much closer to the raw data of the senses, and switch off the machinery of naming and categorization.

The reverse may have happened to Nadia. Words are the foot soldiers of category. To name the lithe, furry cat-ness

before me as *cat* is to obliterate the particular with the general. So it is with the child visualizing the eidetic image of the cat: in naming it, the image shrivels to dust, and with it the unique particularities of that *cat*, destroyed by a category. Perhaps Nadia could access uncluttered, uncategorized 'horse-ness' until she learned to name it.

The brain's predilection for prediction and categorization is not confined to the visual sense. It also anticipates what we hear, feel, taste and smell. Before the wine has even lapped across my tongue, my brain has quite unconsciously and automatically summoned from memory the taste I expect.

try this At a routine meal with your partner or friend, surreptitiously substitute his or her drink with a similar-looking but different beverage – dark cordial for red wine, white wine for grape juice, tea for coffee, etc. Watch for the reaction when his or her brain's prediction is confounded.

Ask what it tasted like. Did it taste like either the expected or the actual drink? In most cases, the response will be that it tasted strange and foreign – not like either.

Wine will not taste of wine for that second that your brain has prepared itself for something else. For much of our lives, we taste memories – what we expect – not the raw, fresh complexity of the sensations on our tongues.

It cannot really be any other way. The billions of bits of information that a single scene might contain – texture, shape, shadows, objects, movement, location – could never be simply transcribed 'raw' into our brains via the senses. Of course we must impose windows through which this is channelled. And the most important of these windows is attention. What we attend to has a royal road into our brain circuits, though there is much that we don't attend to – and of which we are unaware – that also imprints itself on our neural circuits.

But the outside world can hijack our attention. Too loud music in a restaurant can drag our attention away from the

subtleties of the food. The comically nodding toupee of the lecturer can obliterate the words of his excellent speech. Here the unexpected, the comic, the harsh, the frightening, the sexy and the emotional romp into our consciousness like a rampage of soccer hooligans. It is perhaps at these rare moments that we are closest to the unfettered, uncategorized *seeing* that we attribute to young children, and to savants.

Great comedians and artists are loved and remembered because they help us *see* what we take for granted in a new – often absurd – light. Their genius burrows through the 'seen that, done that' habits with which we usually perceive the world. But it's becoming harder and harder for them, for less and less is new. We even categorize jokes and so neuter them. The art world is becoming almost desperate in this struggle to break through the clichés and habits of perception. We find a whole movement in visual art that tries to break through the barriers of perception by jarring us with images that provoke disgust. This is not necessarily the art of cheap thrills. If art is about anything, it is about helping people *see* the object and not the category.

Maybe – just maybe – young children really are closer to the black wastes and the summer rose of Robert Graves's poem. Perhaps this is why time is endless for the infant: for how do we trace the passage of time but by events? And so long as these events and experiences are fresh and uncategorized, time must surely slow to accommodate them. As we get older, events become categories of experience – generalities and replications of some distant fresh happening at the senses. One plane journey merges into another because of how our brains have learned to code them: 'we took off, we landed', not the first awesome sensation of your body lifted into thin air in a juddering tube of metal. Children cry or shout at the wide glare of the looming sky. We name it and obliterate the awe.

But really, how can we tell about the infant's mind? Nadia can't describe hers any more than Paleolithic man can come back to tell us about his. But perhaps there *is* someone who can hint what it might be like – a remarkable Jewish journalist who once lived in the wilderness of Stalinism.

seared in the wide glare

What if we didn't categorize? What if we lived standing at the glass doors of perception, exposed to the full daylight glare of sensation? Would we, as Graves suggested, 'go mad and die that way'? A Russian journalist who seemed to live near this state suggests that we could survive. But we would be as disabled by the particular as we can be by the category.

The great Russian neuropsychologist A. R. Luria wrote beautifully and meticulously about S – the journalist whom he studied over many years – in his book *The Mind of a Mnemonist*[4]. Though the title of this book refers to S's memory, it is as much about this man's minute-to-minute encounters with the raw data of sensation.

S had a prodigious memory, and ended up living his tenuous life as a stage mnemonist – demonstrating prodigious feats of memory for a fee. In the 1920s, however, he was a young reporter, and it was this memory that had caused his editor to send him to Luria. While other journalists would take copious notes at briefings and interviews, S needed none – he remembered almost everything in an uncannily raw form. But Luria soon found that the basis for the journalist's memory was in his powers of *imagery*. And this was not just visual imagery – his was a multimedia carnival of taste, touch, sound and smell as well. He experienced words as *puffs of steam,* for instance. A certain noise had the taste of sweet and sour borscht, a

sensation that gripped his entire tongue. He felt a high-pitched tone as a needle stabbed into his spine. Once when he heard a bell ringing, he saw a small, round object roll before his eyes, his fingers sensed something tough, like rope, and he suddenly had the taste of salt water in his mouth. All this from a simple bell ringing!

S had the power of synaesthesia – the ability to experience sensation in one sense modality through another. His memory was, however, based largely on his visual imagery, and it seems that he had an incredible power of eidetic imagery. He would remember a long series of words by laying them out in various spots along a mental road where he took an imaginary walk – a word by this lamppost here, another in that corner there. When he forgot these words – which he rarely did, even over many years – it would be because he had laid the word in an unlit corner, for instance. When he took a later walk down the street to 'pick up' the words, he 'didn't notice' a particular word because it was in a dark corner. But when he learned lists of words, S would hardly ever see *patterns* in their meaning. So, for instance, if he had to learn dog, swing, sky, cat, cow, horse, chair, door, bed, he would never *categorize* the words into 'animals' or 'furniture'. He would be so caught up in the multisensory sensations that the words evoked that he would fail even to see this simple pattern.

You and I rely precisely on this type of categorization for memory – without it we would remember much less than we do. But for S, his was an entirely different way of remembering – and perceiving – the world. S had escaped the cool web, and lived in the wide glare of the child's day. You might think that S would have had a rather successful life, given these prodigious abilities. On the contrary, he had a rather disorganized, even feckless life. And this was in part because he seemed unable to transcend the particular and learn to categorize and generalize in a way that we all

need to do to survive in an industrial – now digital – economy.

When S read prose – fictional or non-fictional – he had great difficulty extracting meanings and concepts because he was so distracted by the multitude of images and sensations that single words would trigger – puffs of steam and splashes, for instance. For a person so tied to the visual image, abstract concepts that were hard to visualize were a real problem for him: he couldn't grasp the concept of infinity, for instance. To Luria, he even came across as rather dull-witted. He had difficulty understanding Luria's stories because the words called up images that collided with each other, resulting in chaos. He couldn't even ignore the quality of sound of Luria's voice, which set off multisensory images in his mind.

Is this a little bit the way it is for young children? We know for sure that even five-year-old children who have a good command of language tend to think more in images than in words. By the time they are ten, with five years of schooling under their belt, however, they are word- and sound-focused and do not use images to the same extent.

The work of Graham Hitch in Lancaster, England, proved this.[5] He showed children pictures of objects – pens, knives, umbrellas, kangaroos, etc. As they looked at them, the children could concentrate on the name of the picture or its visual image – it was left up to them. Those who had progressed well in the school system were probably more likely to use words. And if they used words, then long words like *kangaroo* would fill up the short-term word memory system in the left hemisphere of their brains – the so-called *phonological loop*.

The phonological loop is the mind's system for holding on to sounds – usually words or numbers – for the few seconds we need to use or check them. 'Did he really say that …?' This brain system allows you to replay sounds you have just